ALASKA ENERGY SECURITY TASK FORCE REPORT

ALASKA ENERGY AUTHORITY

DECEMBER 1, 2023

VOLUME 1

ACKNOWLEDGMENTS

The Alaska Energy Security Task Force consists of 15 voting members and five (5) ex officio members appointed by and serving at the pleasure of the Governor.

The 15 voting members are as follows:

Lieutenant Governor Dahlstrom
(Chair of the Task Force)

Curtis W. Thayer
(Vice Chair of the Task Force and Executive Director of the Alaska Energy Authority)

Clay Koplin
(Vice Chair of the Task Force and Cordova Electric Cooperative - Member from a utility that represents rural Alaska or a community receiving power cost equalization)

Acting Commissioner Emma Pokon
(Commissioner of the Department of Environmental Conservation)

Commissioner John Boyle
(Commissioner of the Department of Natural Resources)

Nils Andreassen, Alaska Municipal League
(Member who represents a city, borough, or municipality)

Tony Izzo, Matanuska Electric Association
(Member with a Railbelt utility background)

John Simms, Enstar
(Member from the oil and gas industry)

Karl Hanneman, International Tower Hill Mines
(Member from the mining industry)

Robert Venables, Southeast Conference
(Member with a background in economic development)

Andrew Guy, Calista Corporation
(Member from the business community)

Jenn Miller, Renewable Independent Power Producers
(Member from any segment of the Alaskan energy industry)

Duff Mitchell, Juneau Hydropower
(Member of the general public)

Isaac Vanderburg, Launch Alaska
(Member of the general public)

Daniel White, University of Alaska Fairbanks

The five (5) ex officio members are as follows:

Commissioner Keith Kurber
(Regulatory Commission of Alaska)

Garrett Boyle
(Representative from the Denali Commission)

Erin Whitney
(U.S. Department of Energy, Arctic Energy Office)

Senator Click Bishop
(District R)

Representative George Rauscher
(District 29)

Michael Baker
INTERNATIONAL

Michael Baker International, Inc.
3900 C Street, Suite 900
Anchorage, AK 99503

December 1, 2023

Fellow Alaskans,

Alaska's economic and energy future rests on identifying, developing, and providing affordable, reliable, and resilient electric, heating, and transportation energy across our state. Understanding this, Governor Dunleavy established the Alaska Energy Security Task Force ("Task Force") in February and March of this year through Administrative Order (A.O.) No. 344 and A.O. No. 345. The purpose of the Task Force is to develop a comprehensive statewide energy plan that evaluates energy generation, distribution, and transmission for the State of Alaska and its communities.

Confronting energy challenges requires decisive and intentional action across all sectors and levels of government. Our Task Force has developed this Alaska Energy Security Task Force Report ("Report") as an iterative planning tool to prepare Alaska to meet this challenge. While broad in its reach, the Report is a first step in a strategic effort to aid Alaska in reaching the goal of energy affordability, reliability, and resilience. This Report could not and does not prescribe the detailed legislative, regulatory, and policy changes that must be developed through further public discussion and involvement. Instead, it establishes baseline considerations, suggests a prioritization of key public policy concerns, and presents a framework for continuous public engagement. Through innovation and collaboration, we aspire not only to reduce the cost of energy but also to reach the goal of $0.10/kWh. There is no magic solution to achieve this goal. The Report recommends actions that would help pave the way to a more affordable and sustainable energy future. Notably, the Report acknowledges that energy resilience is more critical to some Alaskans than others.

We note that this Report and the actions that must follow would not be possible without the dedicated staff of the Alaska Energy Authority and the thoughtful collaboration of representatives from across the Alaska Energy Security Task Force. Over the last ten months, these volunteers and public servants assembled to develop this Report for ensuring Alaska's energy resilience. Through a public planning process with over 150 hours of public meetings, the Task Force has identified over 60 recommendations across six energy priority areas for the three distinct regions of Alaska.

The Task Force recognizes that this is not an exhaustive list of options and that additional opportunities for reliable and sustainable energy for all Alaskans will continue to be considered.

It has been a pleasure to serve and prepare this Report for the Honorable Mike Dunleavy, Governor of the Great State of Alaska, and our fellow Alaskans.

Sincerely,

Nancy Dahlstrom
Lieutenant Governor/ Chair

Curtis Thayer
Vice Chair

Clay Koplin
Vice Chair

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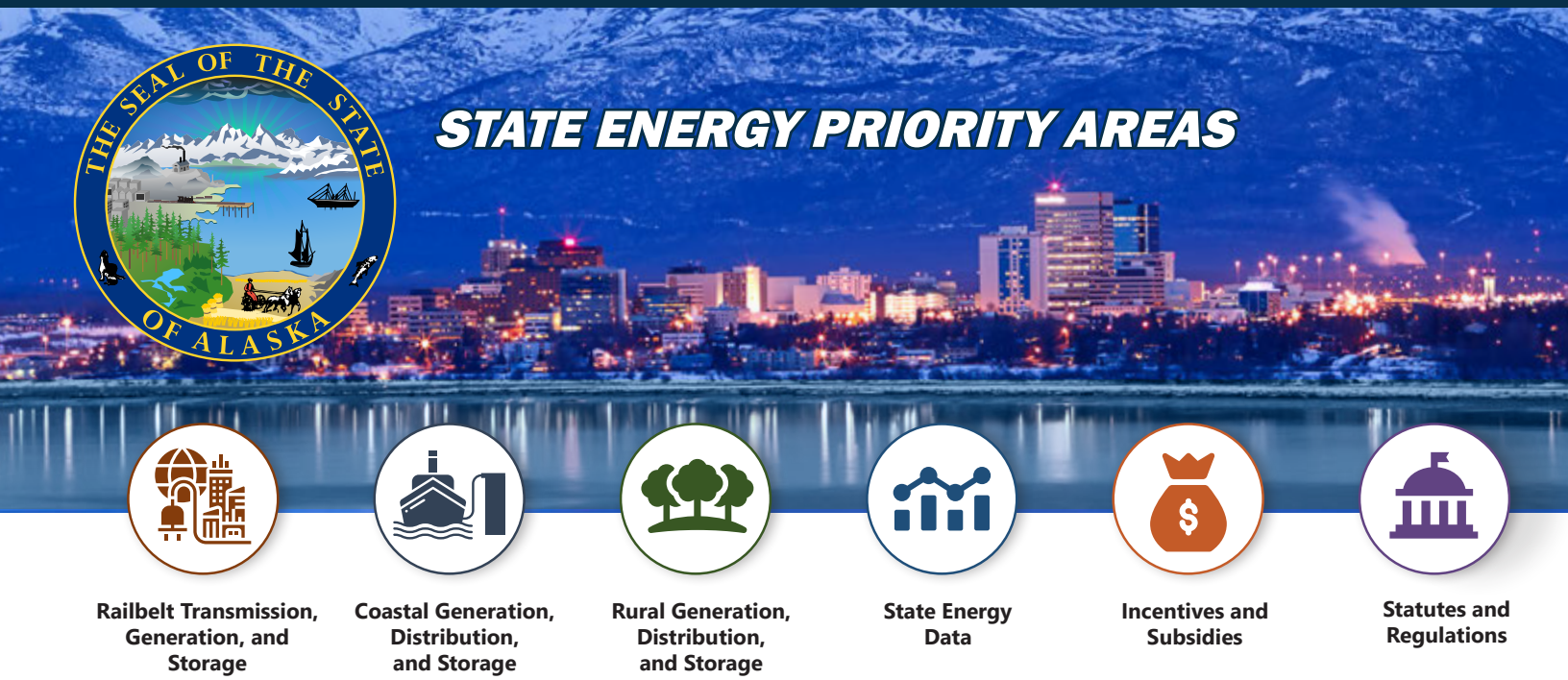
EXECUTIVE SUMMARY



A.O. 345 - ALASKA ENERGY SECURITY TASK FORCE

Governor Mike Dunleavy issued Administrative Order 344 on February 23, 2023, establishing the Alaska Energy Security Task Force ("Task Force"). The purpose of the Task Force is to develop a comprehensive statewide energy plan, that will evaluate energy generation, distribution, and transmission for the State of Alaska and its communities. The development of this plan included collaboration with both public and private stakeholders. This statewide energy plan, including proposed timelines and milestones, will be presented to the governor upon completion.

Administrative Order (A.O.) No. 345 on March 22, 2023 identified the Lieutenant Governor as the Chair. The Alaska Energy Security Task Force consists of 15 voting members and five ex officio members, appointed by and serving at the pleasure of the Governor. A.O. No. 345 was amended for the Task Force to produce a final report with recommendations by December 1, 2023.

The Task Force began meeting in April 2023 and met regularly every three weeks through October 2023. The Task Force divided into six subcommittees to work more efficiently in the time available. Subcommittees were divided regionally; Railbelt, Coastal, Rural, and functionally; Data, Incentives & Subsidies and Statutes & Regulations. Each subcommittee met bi-weekly outside of the regularly scheduled Task Force meetings. The subcommittees were tasked to develop strategic priorities supported by actions intended to meet the intent of AO 345.

GOALS

In order to develop a comprehensive recommendation, the Task Force determined the need to establish long-term, mid-term, and short-term goals that reflect desired outcomes. These goals were centered on affordability, reliability, and resilience - the three key factors the Task Force identified to meet the overall goal of lowering the cost of energy for Alaskans while simultaneously ensuring energy security for our state. The recommended goals include the following:

- Short-term: Minimize regret cost while providing reliable service.
- Mid-term: Invest in infrastructure improvements to advance the long-term goal of energy diversification.
- Long-term: Significantly diversify power generation with an emphasis on local, reliable, and affordable energy.

The Task Force was motivated to seek transformational approaches to reach these goals that might provide electrical energy to residents at a target price of $0.10/kwh in the future. The Task Force reviewed numerous generation and transmission configurations and strategies from publicly available data but did not complete independent or internal cost estimates in developing action items or strategies.

In the **short-term**, the Task Force acknowledges that continued reliability for generation and transmission in many areas of the state may require certain actions that are likely to increase costs. The expected increase in costs is directly tied to project permitting, available fund or financing, and in the case of the Railbelt, local gas supply market in Cook Inlet. Short term options for electric and gas utilities that can reliably serve the local demand are limited. The magnitude of the rising costs, and the ability to arrest and then reverse these rising costs as energy sources are diversified, will depend upon the State of Alaska's collective response to the recommendations set forth within. Therefore, it is important that investments in the short term do not hinder mid-term and long-term goals of infrastructure improvements for diversified power generation sources.

In the **mid-term** (2-20 years), significant state and federal investment must be made in energy and power infrastructure to enable the long-term goal of diversified, local, reliable, and affordable energy. Alaska must invest in its future. Transmission system upgrades must be made to allow cost competition to optimize all generation, including renewables. Energy storage is another much needed investment area; where it is viewed that shared costs and control will help optimize overall energy cost and enable diverse generation forms to expand. Transmission upgrades, further deployment of energy storage and improved operating models are necessary to facilitate economic dispatch of electrical energy.

In the **long term**, for 2040 and beyond, the Task Force established a goal that the system for generation, transmission and space heating should reflect a significant diversification of energy supply from 2023 metrics and be affordable, sourced within the State of Alaska and, most importantly, reliable. Energy generation sources also need to be considered in the context of a sustained supply for the years to come.

ENERGY PRIORITY AREAS & STRATEGIES

Each subcommittee identified key strategies they felt supported the A.O. No. 345 mandate. Energy Priority Areas and strategies are organized by subcommittee. The first three subcommittees focused on geographic area needs and created strategies to meet those needs. The Railbelt subcommittee covers the geographic area from Homer, AK, the Kenai Peninsula, to Anchorage, then north through the Mat-Su Borough to Fairbanks. The Coastal Subcommittee covers coastal communities through the Aleutian Chain and then south and east to include all Southeast Alaska communities. Finally, the Rural subcommittee represented all rural communities outside those represented by the first two geographic subcommittees.

Three subcommittees focused on functional issues that support the three geographic subcommittees. The Data subcommittee focused on all past, present and future energy data that exists or may be collected in the future. The Incentives and Subsidies subcommittee presented ideas that might help to lower energy costs across the state. Finally, the Statutes and Regulations subcommittee looked through all subcommittee recommendations and generated recommendations related to legislative or departmental actions necessary to guide state policy or appropriations toward the goal of lowering costs of energy.

PRIORITY A: RAILBELT TRANSMISSION,GENERATION, AND STORAGE

The Railbelt Transmission, Generation, and Storage subcommittee identified three key strategies:

A-1 Unify Railbelt transmission and storage: Unify all existing transmission assets along the Railbelt and Bradley Lake under Alaska Energy Authority or a new not-for-profit regulated utility.

A-2 Diversify generation: Encourage and coordinate the diversification of Railbelt generation assets through projects and policy that provide opportunities to maximize energy cost savings.

A-3 Increase demand: Significantly increase load to drive down energy rates.

Key Outcomes

- Investing in transmission and storage infrastructure and simplifying its operation will ultimately enable the long-term goal to significantly diversify Railbelt generation and provide energy that is reliable, affordable, and generated in-state.
- Greater diversification of power generation to provide reliable, lower cost electricity, for Railbelt rate payers.
- A significant increase in load would spread fixed costs over a larger base, drive down prices for all consumers, and spur economic development.

PRIORITY B: COASTAL GENERATION, DISTRIBUTION, AND STORAGE

The Coastal Generation, Distribution, and Storage Subcommittee identified four key strategies:

B-1 Alaska market initiatives: Maximize utilization of existing energy generation and transmission and promote new renewable energy assets to lower energy costs for Alaskans and their industries through market initiatives and expansion.

B-2 Alaska policy recommendations: Enhance Alaska's departmental and regulatory policies to spur and sustain renewable energy and transmission development to cut energy costs and advance economic prosperity for Alaska

B-3 State of Alaska coordination with Federal agencies and with Federally and State recognized Tribes recommendations: Refine federal policy to bolster Alaska's renewable energy and support communities in securing affordable energy.

B-4 Alaska hydropower generation recommendations: Enhance Alaska's policies to fast-track hydropower to provide affordable, secure energy for Alaskans.

Key Outcomes

- Strategically planned market initiative actions with tactical implementation will optimize State of Alaska's Energy plan to lower Alaskans' energy costs (electric, heating, transportation).
- Administration and AEA strategic maturation of Task Force recommendations, optimizing federal funding for the strategic achievement of goals will reduce the cost of power for Alaskans today and leave an energy legacy for generations to follow.
- The expected results and outcomes from this cross-agency, inclusive tribal interest effort will lower Alaska's energy costs and reduce the dependency on imported fuels, using local Alaska land and energy resources for the benefit of Alaska.
- The State of Alaska can take an active, willful, and calculated role in lowering the energy cost for Alaskans, by effectively guiding hydropower development policy and investments in hydropower assets and related transmission infrastructure.

C PRIORITY C: RURAL GENERATION, DISTRIBUTION, AND STORAGE

The Rural Generation, Distribution, and Storage Subcommittee identified five key strategies:

C-1 Increase access to capital: Increase access to capital to provide additional funding/finance for project and infrastructure construction.

C-2 Infrastructure investment: Support existing infrastructure and add new infrastructure to provide Alaskans with reliable energy at reduced cost.

C-3 Lower operational costs: Lower operational costs of power/electricity in rural Alaskan villages.

C-4 Increase economies of scale: Reduce the cost of power and improve reliability.

C-5 Data decision making: Improve access to relevant data necessary to make informed value decisions related to energy generation, distribution, transmission and storage in rural Alaskan villages.

Key Outcomes

- Identify sufficient investment in energy projects/infrastructure to reduce the cost of energy in rural Alaska.
- Investment in connected regional infrastructure for the community needs that lead to the most affordable and reliable energy.
- Connect communities to each other and anchor tenants to improve the reliability and reduce the cost of energy.

D PRIORITY D: STATE ENERGY DATA

The State Energy Data Subcommittee identified four key strategies:

D-1 Establish a data department within the Alaska Energy Authority (AEA): Staff and properly equip a team dedicated to energy data management within the Alaska Energy Authority.

D-2 Establish an energy data governance committee: Ensure that collection, quality, storage, use of, and access to energy data in Alaska meets industry standards, current protocols, and best practices.

D-3 Fund data capacity: Establish dedicated data collection and analysis positions in state agencies that are responsible for collecting, analyzing, hosting, distributing data in formats that are accessible

D-4 Improve existing statewide energy data and collect new: Fund a gap analysis of energy data, including existing data, accessibility, quality, age, and what form and character of data is and would be needed for data-informed decision making.

Key Outcomes

- Provision of consistent and accessible data further enabling data-informed decision-making on energy projects and policy across the state and across electric, heat, and transportation sectors.
- Energy data in Alaska meets and conforms with industry standards, protocols, and best practices. Increased participation of energy data stakeholders and end-users.
- Increased collaboration, reduced duplication of efforts, ease of data access, and better-informed decision making.

PRIORITY E: INCENTIVES AND SUBSIDIES

The Incentives and Subsidies Subcommittee identified five key strategies:

E-1 Strengthen state-federal coordination and investment: Establish a state/federal working group that identifies and works toward improved access on federal lands with funding in place to accelerate a local, reliable, and affordable energy transition.

E-2 Reduce the barriers to private sector investments: Create a strategic approach to policy, tax, and program development that stimulates and incentivizes private sector activity leading to lower cost, local, and reliable energy.

E-3 Maintain residential subsidy focused on equity, while reducing need across communities: Ensuring residents have access to subsidy and to 1) consider alternative mechanisms, 2) strategically deploy PCE funds to advance low-cost energy solutions, and 3) expand the ability of PCE to lower costs across sectors within communities.

E-4 Improve the economics of project development: Create a multi-pronged approach to reduce risk to utilities and project proponents, increase the availability of financing mechanisms, and encourage ancillary investments.

E-5 Increase State programmatic investments: Evaluate and update current programmatic investments.

Key Outcomes

- Increase knowledge of available funding and implementation support for energy projects in Alaska, and leverage current federal investment through IIJA and IRA.
- Initiating a series of statutory changes and encouraging quicker adoption by communities and use by utilities and others will unlock private sector investment.
- Working toward a flatter rate across Alaska improves the mobility of residents, increases economic opportunity, and improves quality of life for Alaskans.

PRIORITY F: STATUTES AND REGULATIONS

The Statutes and Regulations Subcommittee identified four key strategies:

Statutes F-1 Improve Electrical Transmission System: Identify changes in statutes, regulations, or appropriations needed to improve electrical transmission in Alaska.

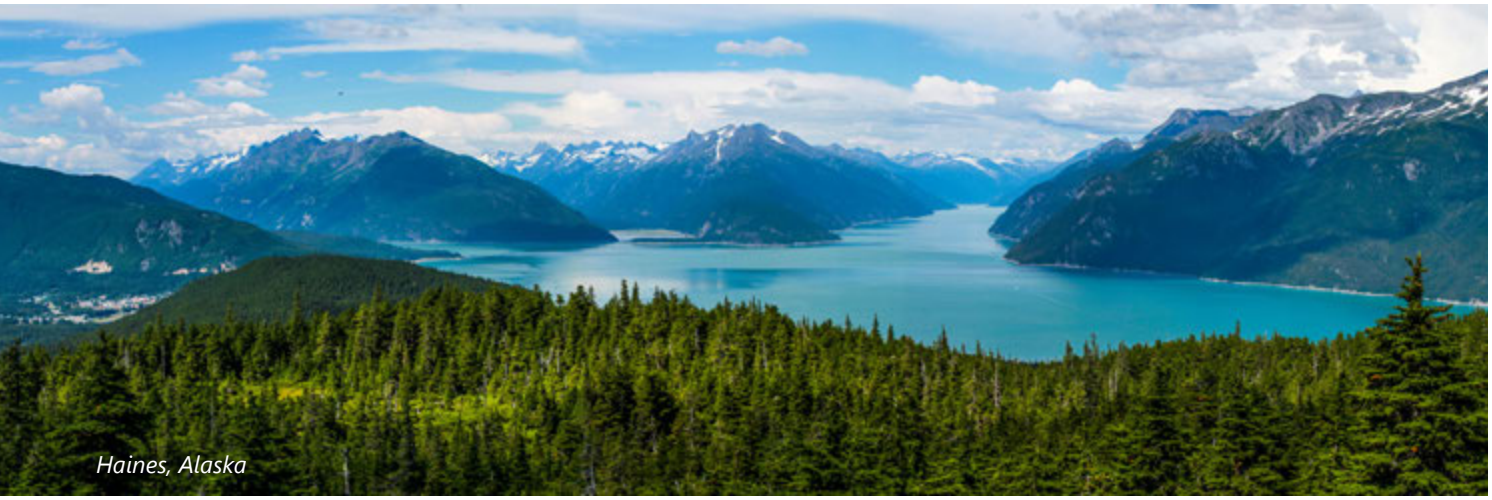
Statutes F-2 Encourage Energy and Generation Diversification: Identify changes in statutes, regulations, or appropriations needed to encourage energy generation diversification.

Statutes F-3 Utility Regulation: Identify changes in statutes, regulations, or appropriations needed to implement AESTF recommendations related to utility regulation.

Statutes F-4 Executive and Organizational Changes: Staff and properly equip a team dedicated to energy data management within the Alaska Energy Authority.

Key Outcomes

- More resilient and reliable transmission and electric grid system that will lower rates, help bring online clean energy, reduce costs for consumers, and promote job creation.
- Greater diversification of power generation to provide reliable, lower cost electricity, heat, and transportation for rate payers.
- Improved utility regulation and a more efficient RCA will allow utilities to be able to respond to system challenges in a more timely and cost effective manner.



Haines, Alaska

NEXT STEPS AND ACTIONS RECOMMENDED FOR IMMEDIATE IMPLEMENTATION

The Task Force recognizes that this report will become an iterative planning tool to be continually updated to meet the mandate of A.O. No. 344 and A.O. No. 345. Updates to this report will become more comprehensive in nature as actions are implemented across agencies and departments. This report is intended to guide institutions in building programs and policies that promote energy affordability, reliability, and resilience.

The actions listed below are those actions the Task Force feels are ready for immediate implementation to help advance the overall actions/outcomes identified in the plan. These actions deserve to be considered for further development by the Governor or the Legislature in the coming legislative session. Detailed description of each of these actions can be found in **Appendix II- Additional Action Detail Summary**.

High priority actions are as follows:

Railbelt A-1.1: Unify all existing transmission assets along the Railbelt and Bradley Lake under AEA or a new not-for-profit regulated utility.

Railbelt A-2.1; Incentives E-2.1(3); and Statutes F-3.5: Adopt a Clean Energy Standard with incentives to diversify generation

Railbelt A-2.3.1; A-2.4.1; and A-2.4.2: Progress known near- and long-term energy diversification projects to a go/no-go decision (i.e., Dixon Diversion, Susitna Watana, AKLNG, Bullet Line and Alternatives)

Coastal B-1.1; B-1.2; B-1.3; B-1.4; and B-1.5: Alaska Market Initiatives

Coastal B-2.3: Strengthen and Streamline the State of Alaska's internal state regulatory and land use administrative processes to accelerate approval to advance strategic energy projects and transmission for regional energy security and lower energy costs.

Coastal B-2.6; Rural C-3.1; and Incentives E-5.1(4): Recruit, Train, and Enhance Alaska workforce with technical skills and training to increase capability & capacity-building activities to lower Alaska energy costs and to sustain Alaska's growing energy infrastructure.

Coastal B-4.1: Foster, Support, and Assist Hydropower development and their transmission in Alaska to lower energy costs, provide energy security, and spur economic growth, job creation, and prosperity for Alaska.

Rural C-2.3: Fund and Construct Opportunities to Connect Rural Communities through Transmission Lines and Other Shared Energy Projects.

Rural C-3.4: Procure, install, and improve grid modernization and automation

Data D-1.1; D-1.2; D-1.3; D-1.4; D-1.5; and, Statutes F-4.1: Establish a Data Department within the Alaska Energy Authority (AEA), using statute as necessary

Data D-2.1 and D-2.2: Establish an energy data governance committee that is responsible for setting minimum protocols for data collection, quality, storage, use, and access

Data D-3.1 and D-3.2: Fund data capacity

Data D-4.1; D-4.2; D-4.3; and D-4.4: Improve existing statewide energy data and collect new, needed data with respect to electricity, heat, and transportation

Incentives E-2.1(4): Implement low-interest loan program (concessionary capital, like Power Project Loan Fund) that facilitates affordable energy development and infrastructure improvements.

Incentives E-3.1(2): Implement a strategic approach to lowering costs according to highest use communities.

Incentives E-3.1(5): Consider the development of a postage stamp rate alternative, where all Alaskans pay the same rate.

Incentives E-4.1(1): Establish a Green Bank for financing of community scale energy efficiency projects.

Incentives E-4.1(6): Reestablish the Emerging Energy Technology Fund (EETF) in order to promote public-private investment in energy technology demonstration and deployment programs.

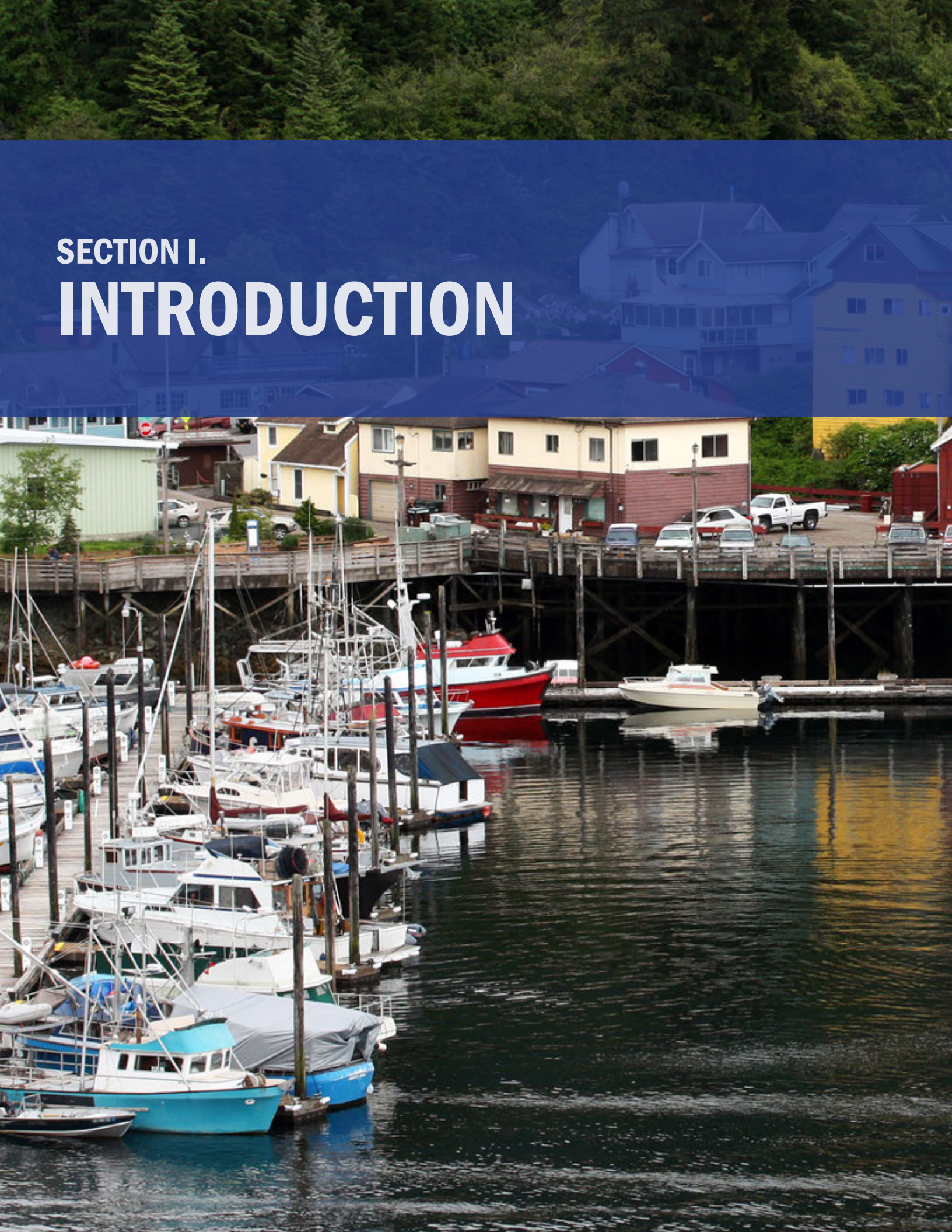
Statutes F-1.1: Identify state matching funds necessary for all federal funds available for transmission infrastructure (also see Action F-1.6, B-2.4, C-2.3).

Statutes F-2.1: Identify state matching funds necessary for all federal funds available for generation infrastructure when a cost/benefit analysis shows a positive benefit to the state or the communities the project is intended for. (see also C-3.4).

Statutes F-2.2: Monitor and evaluate third party development of carbon capture and sequestration technologies and pass legislation establishing a regulatory framework for the geologic storage of carbon.

Statutes F-3.1: Provide support for the Regulatory Commission of Alaska (RCA) sufficient to improve the RCA's ability to respond timely and appropriately to the complex energy production, generation, and transmission challenges in Alaska.

Statutes F-3.2: Maintain and expand the PCE Program until all Alaskans benefit from actual equitable and lower cost energy.



SECTION I.

INTRODUCTION


Ketchikan, Alaska

BACKGROUND

On September 30th, 2022, Governor Dunleavy established the Office of Energy Innovation to provide a central point of focus for Alaska's efforts to reduce the cost of energy for residents. Alaskans suffer from exorbitantly high energy costs, restricted energy supply, and limited opportunities to drive down energy costs to consumers. Consequently, energy security and affordability are critical to Alaska's prosperity going forward. The Task Force will provide recommendations on energy policy for the State of Alaska, as well as strategies and tactics to achieve its goal of reducing the cost of energy to Alaska residents.

TASK FORCE FORMATION

Governor Mike Dunleavy issued Administrative Order 344 on February 23, 2023, establishing the Alaska Energy Security Task Force ("Task Force"). The purpose of the Task Force is to develop a comprehensive statewide energy plan that will evaluate energy generation, distribution, and transmission for the State of Alaska and its communities. The development of this Alaska Energy Security Task Force Report included collaboration with both public and private stakeholders. This Report, including proposed timelines and milestones, will be presented to the governor upon completion.

Administrative Order 345 on March 22, 2023 identified the Lieutenant Governor as the Chair. The Alaska Energy Security Task Force consists of 15 voting members and five ex officio members, appointed by and serving at the pleasure of the Governor. The duties and responsibilities of the task force were established as follows:

- Establish a baseline energy portfolio for the State of Alaska.
- Identify and evaluate potential future changes that could occur to energy supply and distribution in the state; the impacts of such changes; and the opportunity for mitigating impacts and leveraging opportunities associated with such change.
- Identify solutions for meeting Alaska's energy needs now and in the future with a focus on affordability, reliability and security.
- Identify policies, programs, regulatory changes, and funding that could accelerate adoption of these energy strategies.
- Develop and maintain a public database of task force information and recommend


Valdez, Alaska

strategies for sharing energy data and information through an energy data portal.
- Recommend a statewide energy goal, a plan to achieve it, and identify additional work that may be required to refine this vision.

The voting members are as follows:
- Lieutenant Governor Dahlstrom (Chair of the Task Force)
- Acting Commissioner Emma Pokon (Commissioner of the Department of Environmental Conservation)
- Commissioner John Boyle (Commissioner of the Department of Natural Resources)
- Curtis Thayer (Co-Vice Chair of the Task Force) (The Executive Director of the Alaska Energy Authority)
- Clay Koplin, (Co-Vice Chair of the Task Force) Cordova Electric Cooperative (Member from a utility that represents rural Alaska or a community receiving power cost equalization)
- Nils Andreassen, Alaska Municipal League (Member who represents a city, borough, or municipality)
- Tony Izzo, Matanuska Electric Association (Member with a Railbelt utility background)
- John Sims, Enstar (Member from the oil and gas industry)
- Karl Hanneman, International Tower Hill Mines (Member from the mining industry)
- Robert Venables, Southeast Conference (Member with a background in economic development)

TASK FORCE ORGANIZATION:

15
Member Board

Chaired by Lt. Governor Dahlstrom

5
Ex-officio members from legislature, state & federal agencies


Lieutenant Governor Nancy Dahlstrom
Chair


Curtis W. Thayer
Alaska Energy Authority
Vice Chair


Clay Koplin
Cordova Electric Cooperative
Vice Chair


Commissioner John Boyle
Department of Natural Resources


Acting Commissioner Emma Pokon Department of Environmental Conservation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Dan White
University of Alaska Fairbanks


Senator Click Bishop
(Ex Officio)


Garrett Boyle
Denali Commission
(Ex Officio)


Commissioner Keith Kurber
Regulatory Commission of Alaska
(Ex Officio)


Representative George Rauscher
(Ex Officio)


Erin Whitney
U.S. Department of Energy
Arctic Energy Office
(Ex Officio)

Governor Mike Dunleavy (center) establishes issued Administrative Order 340 on September 30, 2022, creating the Office of Energy Innovation to address the evolving energy needs of Alaska.

- Andrew Guy, Calista Corporation (Member from the business community)
- Jenn Miller, Renewable Independent Power Producers (Member from any segment of the Alaskan energy industry)
- Duff Mitchell, Juneau Hydropower (Member of the general public)
- Isaac Vanderburg, Launch Alaska (Member of the general public)
- Dan White, University of Alaska Fairbanks

The ex officio members are as follows (plus the two seats from the legislature):

- Commissioner Keith Kurber (Member of the Regulatory Commission of Alaska)
- Garrett Boyle (Representative from the Denali Commission)
- Erin Whitney (From the U.S. Department of Energy, Arctic Energy Office)
- Senator Click Bishop (District R)
- Representative George Rauscher (District 29)

SUBCOMMITTEE FORMATION

The Task force was given the authority to create advisory subcommittees to further organize the planning process. Subcommittee organization was proposed during Task Force Meeting #1, hosted April 25, 2023. Further discussion regarding subcommittee formation was presented during Meeting #2, and finalized during Task Force Meeting #3. The final subcommittee formation and organization is presented below.

- **Railbelt Transmission, Generation, and Storage**: Co-Chairs: Tony Izzo & Jenn Miller
- **Coastal Generation, Distribution, and Storage**: Co-Chairs: Duff Mitchell & Robert Venables
- **Rural Generation, Distribution, and Storage**: Co-Chairs: Clay Koplin & Andrew Guy
- **State Energy Data:** Chair: Dan White
- **Incentives and Subsidies**: Co-Chairs: Nils Andreassen & Isaac Vanderburg
- **Statutes and Regulations**: Co-Chairs: Robert Venables & Karl Hanneman

Lt. Governor Dahlstrom, Task Force Chair

Kodiak, Alaska

ALASKA ENERGY SECURITY TASK FORCE REPORT GOALS DEFINED

- **Energy Affordability:** consumers should be able to pay for their electricity use without being overburdened to meet basic needs.
- **Energy Reliability:** is the ability of a power system to withstand instability, uncontrolled events, cascading failures, or unanticipated loss of system components.
- **Energy Security/ Resilience:** uninterrupted availability of energy sources at an affordable price.

GOALS AND OBJECTIVES

In order to develop a report of comprehensive recommendations, the Task Force focused on strategies and actions to advance the goals of affordability, reliability, and security/resilience. To meet these goals, short-term, mid-term, and long-term objectives were developed. These include the following:

- **Short-term:** Minimize regret cost while providing reliable service.
- **Mid-term:** Invest in infrastructure improvements to advance our long-term goal of energy diversification.
- **Long-term:** Significantly diversify power generation with an emphasis on local, reliable, and affordable energy.

The Task Force was motivated to seek transformational approaches to reach these goals that might provide electrical energy to residents at a target price of $0.10/kwh in the future. The Task Force reviewed numerous generation and transmission configurations and strategies from publicly available data but did not complete independent or internal cost estimates in developing action items and strategies.

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of the Railbelt, local gas supply market in Cook Inlet. Short term options for electric and gas utilities that can reliably serve the local demand are limited. The magnitude of the rising costs, and the ability to arrest and then reverse these rising costs as energy sources are diversified, will depend upon our collective response to the recommendations set forth within. Therefore, it is important that investments in the short term do not hinder mid-term and long-term objectives of infrastructure improvements for diversified power generation sources.

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In the **long-term** (2040 and beyond), the Task Force established an objective that the system for generation, transmission and space heating within the Railbelt should reflect a significant diversification of energy supply from 2023 metrics and be affordable, sourced within the State of Alaska and, most importantly, reliable. Energy generation sources also need to be considered in the context of a sustained supply for the years that follow.

ORGANIZATION OF TASK FORCE REPORT RECOMMENDATIONS

ENERGY PRIORITY AREA/SUBCOMMITTEE

Section IV. Energy Priority Areas of the Report are color coded based on Priority Area/Subcommittee.

REGIONAL SUBCOMMITTEES

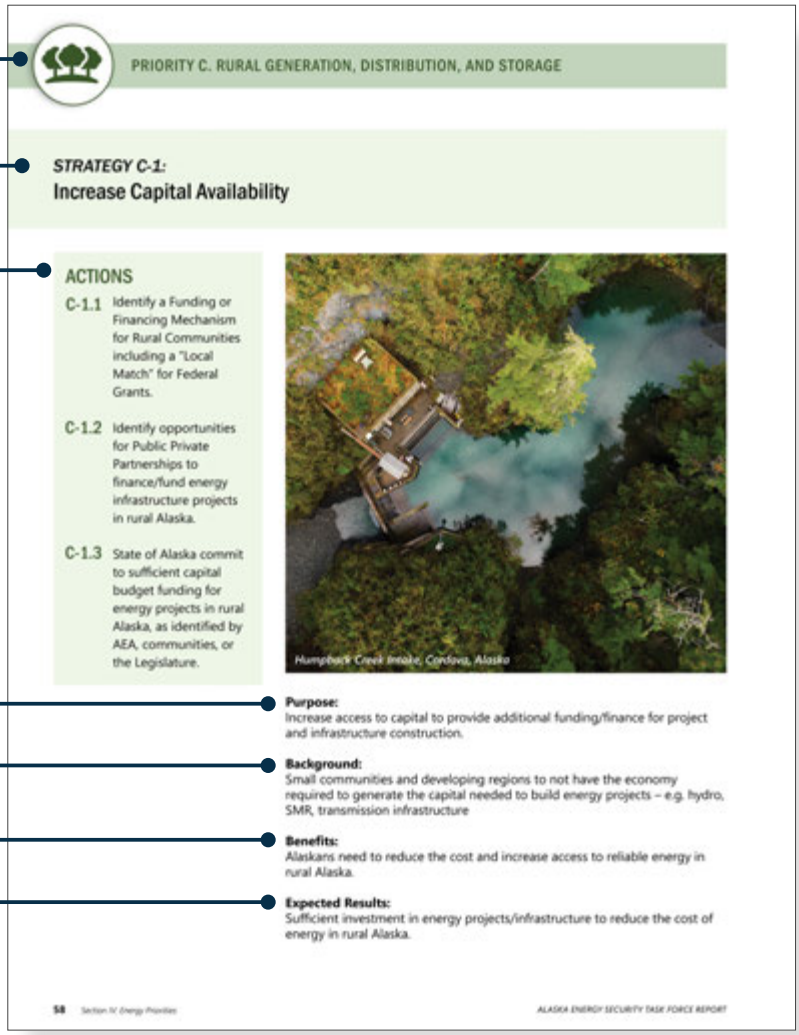
- Railbelt
- Coastal
- Rural

FUNCTIONAL SUBCOMMITTEES

- State Energy Data
- Incentives and Subsidies
- Statutes and Regulations

STRATEGY DETAILS AND LIST OF ACTIONS

Section IV. Energy Priorities further details Strategies and lists actions for each Priority Area/Subcommittee.

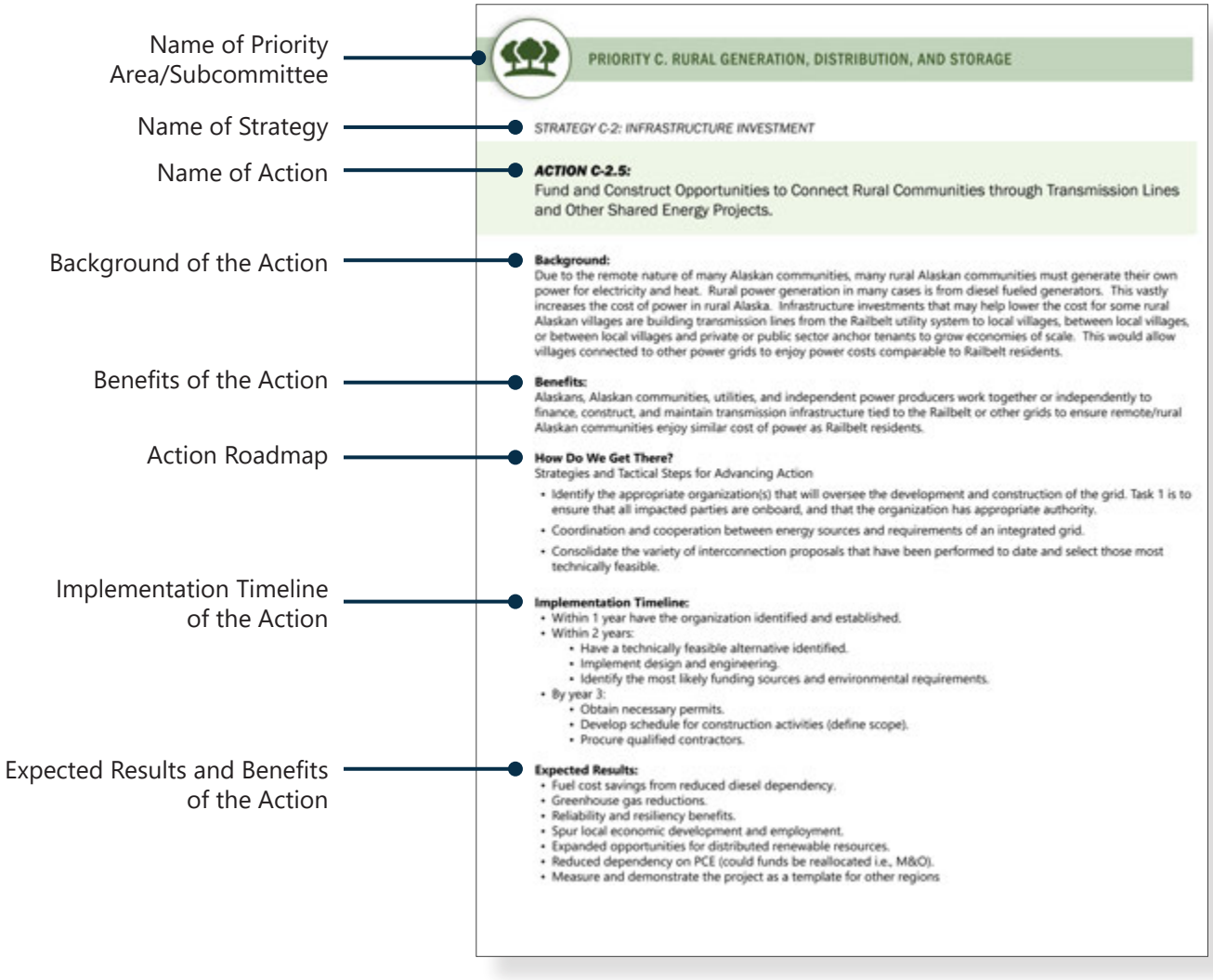


Sample Page organization and layout illustrated above.

ORGANIZATION OF TASK FORCE REPORT RECOMMENDATIONS

ADDITIONAL DETAILS RELATED TO ACTIONS

Appendix II Additional Action Detail Summary includes background information and an implementation roadmap for individual actions identified in **Section IV. Energy Priorities.**



Sample Page organization and layout illustrated above.

NEXT STEPS AND ACTIONS RECOMMENDED FOR IMMEDIATE IMPLEMENTATION

Section V. Next Steps includes actions that the Task Force feels are ready for immediate implementation to help advance the strategies and outcomes identified in the plan. These actions deserve to be considered for further development by the Governor or the Legislature in the coming legislative session.

SECTION II.

PLANNING PROCESS

Anchorage, Alaska

OVERVIEW

The Task Force planning process was conducted over 28 weeks and involved participation from both members of the Task Force and the Alaska Energy Authority, and participation from the public. Six separate Subcommittees were formed to add efficiency to the effort. The Task Force met every other week, and Subcommittee meetings were held during the days in between each Task Force meeting.

All Task Force and Subcommittee meetings were noticed per the State of Alaska Open Meetings Act, and were open to the public. Most meetings were attended by the public and were often supplemented by invited stakeholders and energy experts from around the state.

An Energy Symposium Series, and support from academia and consultants provided key support to the Task Force and added to the planning process that resulted in this report.

Also notable in this planning process is the fact that all Task Force members are senior executives in state government, in economic development organizations, in local utilities, or in private industry. All of these individuals gave significant time to meet the expectations and goals set out in A.O. No. 344 and 345. Several subcommittee meetings were either whole day or half day events demanding considerable time away from full time commitments.

Planning Process by the Numbers:

60+
Subcommittee Meetings

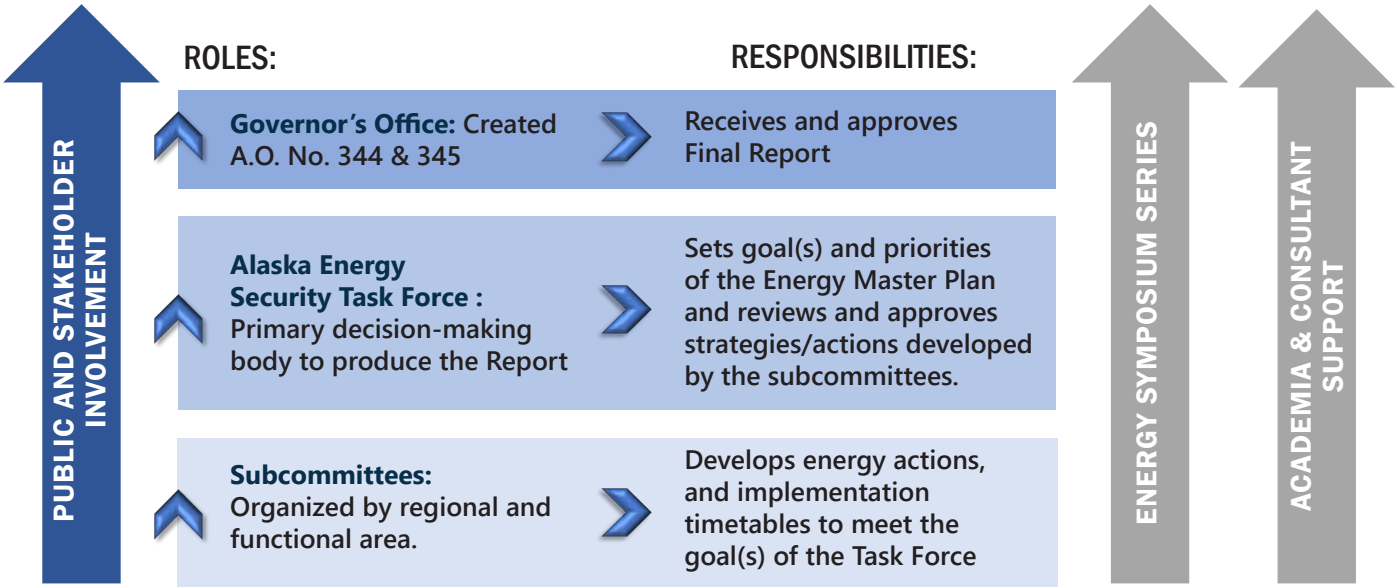
11
Task Force Meetings

150+
Hours of Public Meetings

8
Energy Symposiums with 16 Hours of OnDemand learning

6
Subcommittees have created over 60 preliminary actions for consideration

PLANNING PROCESS



Planning Process for the Alaska Energy Security Task Force Report

Relevant roles, responsibilities and other participation details are outlined in the graphic below. Task force members met regularly through standing meetings, subcommittee meetings, and educational energy symposiums. Subcommittee meetings primarily consisted of members identifying and refining Energy Priorities for their specific geographical or functional area, and creating recommended actions the administration, state agencies, or the legislature might take to reach Task Force defined goals; to make energy more affordable, more reliable, and more resilient in Alaska for Alaskans. Task Force meetings encouraged in-person interaction and focused on Subcommittee reports, and review of work progress. Two full day Task Force meetings included subcommittee breakout sessions to allow face-to-face interaction and concentrated effort. Further details regarding the number and hours of meetings are included below. Meeting materials and documentation may be referenced in **Appendix VI.**

TASK FORCE MEETINGS AND SCHEDULE

Number	Meeting	Date	Time
1	Task Force	Tuesday, April 25, 2023	2:00 PM – 4:00 PM
2	Task Force	Tuesday, May 9, 2023	3:00 PM – 5:00 PM
3	Task Force	Tuesday, June 27, 2023	2:00 PM – 4:30 PM
4	Task Force	Tuesday, July 18, 2023	1:30 PM – 4:30 PM
5	Task Force	Tuesday, August 8, 2023	9:00 AM – 4:40 PM
6	Task Force	Tuesday, August 29, 2023	10:00 AM – 2:00 PM
7	Task Force Meeting and Status Update at National Hydropower Regional Meeting	Wednesday, September 13, 2023	9:00 AM – 10:00 AM
8	Task Force	Tuesday, September 19, 2023	9:00 AM – 10:00 AM
9	Task Force	Tuesday, October 3, 2023	9:00 AM – 4:30 PM
10	Task Force	Tuesday, October 10, 2023	2:00 PM – 4:00 PM
11	Task Force	Tuesday, October 24, 2023	5:00 PM – 7:00 PM
12	Task Force	Tuesday, October 31, 2023	9:00 AM – 4:30 PM
13	Task Force	Tuesday, November 7, 2023	2:00 PM – 5:00 PM
14	Task Force	Monday, November 20, 2023	3:00 PM - 4:00 PM

SUBCOMMITTEE MEETINGS AND SCHEDULE

PRIORITY A: RAILBELT TRANSMISSION,GENERATION, AND STORAGE

The Railbet Transmission, Generation, and Storage subcommittee meetings were noticed per the State of Alaska Open Meetings Act. Meetings that occurred are listed below and meeting material is available in **Appendix VI**.

Railbelt Transmission, Generation, and Storage Subcommittee Meetings and Schedule

Number	Subcommittee	Date	Time
1	Railbelt Transmission, Generation and Storage	Tuesday, July 25, 2023	3:00 PM – 4:00 PM
2	Railbelt Transmission, Generation and Storage	Tuesday, August 8, 2023	10:55 AM – 12:25 PM
3	Railbelt Transmission, Generation and Storage	Wednesday, August 30, 2023	1:00 PM – 2:00 PM
4	Railbelt Transmission, Generation and Storage	Tuesday, September 5, 2023	3:00 PM – 4:00 PM
5	Railbelt Transmission, Generation and Storage	Thursday, September 14, 2023	9:00 AM – 4:00 PM
6	Railbelt Transmission, Generation and Storage	Tuesday, September 19, 2023	10:40 AM – 12:00 PM
7	Railbelt Transmission, Generation and Storage	Monday, September 25, 2023	12:00 PM – 4:00 PM
8	Railbelt Transmission, Generation and Storage	Friday, October 6, 2023	12:00 PM – 4:00 PM
9	Railbelt Transmission, Generation and Storage	Tuesday, October 17, 2023	1:00 PM – 3:00 PM

PRIORITY B: COASTAL GENERATION, DISTRIBUTION, AND STORAGE

The Coastal Generation, Distribution, and Storage Subcommittee meetings were noticed per the State of Alaska Open Meetings Act. Meetings that occurred are listed below and meeting material is available in **Appendix VI**.

Coastal Generation, Distribution and Storage Subcommittee Meetings and Schedule

Number	Subcommittee	Date	Time
1	Coastal Generation, Distribution and Storage	Friday, July 28, 2023	11:00 AM – 12:00 PM
2	Coastal Generation, Distribution and Storage	Tuesday, August 8, 2023	10:55 AM – 12:25 PM
3	Coastal Generation, Distribution and Storage	Friday, August 11, 2023	11:00 AM – 12:00 PM
4	Coastal Generation, Distribution and Storage	Friday, August 25, 2023	11:00 AM – 12:00 PM
5	Coastal Generation, Distribution and Storage	Friday, September 1, 2023	11:00 AM – 12:00 PM
6	Coastal Generation, Distribution and Storage	Friday, September 8, 2023	11:00 AM – 12:00 PM
7	Coastal Generation, Distribution and Storage	Friday, September 15, 2023	10:00 AM – 12:00 PM
8	Coastal Generation, Distribution and Storage	Friday, September 15, 2023	2:00 PM – 3:00 PM
9	Coastal Generation, Distribution and Storage	Tuesday, September 19, 2023	10:40 AM – 12:00 PM
10	Coastal Generation, Distribution and Storage	Friday, September 22, 2023	11:00 AM – 12:00 PM
11	Coastal Generation, Distribution and Storage	Thursday, September 28, 2023	11:00 AM – 12:00 PM
12	Coastal Generation, Distribution and Storage	Friday, October 20, 2023	11:00 AM – 12:00 PM

C PRIORITY C: RURAL GENERATION, DISTRIBUTION, AND STORAGE

The Rural Generation, Distribution, and Storage Subcommittee meetings were noticed per the State of Alaska Open Meetings Act. Meetings that occurred are listed below and meeting material is availble in **Appendix VI**.

Rural Generation, Distribution and Storage Meetings and Schedule

Number	Subcommittee	Date	Time
1	Rural Generation, Distribution and Storage	Tuesday, July 25, 2023	1:00 PM – 2:00 PM
2	Rural Generation, Distribution and Storage	Tuesday, August 8, 2023	10:55 AM – 12:25 PM
3	Rural Generation, Distribution and Storage	Thursday, August 17, 2023	1:00 PM – 2:00 PM
4	Rural Generation, Distribution and Storage	Thursday, August 24, 2023	1:00 PM – 2:00 PM
5	Rural Generation, Distribution and Storage	Thursday, September 7, 2023	1:00 PM – 2:00 PM
6	Rural Generation, Distribution and Storage	Monday, September 18, 2023	1:00 PM – 3:00 PM
7	Rural Generation, Distribution and Storage	Tuesday, September 19, 2023	10:40 AM – 12:00 PM
8	Rural Generation, Distribution and Storage	Friday, September 22, 2023	1:00 PM – 2:00 PM
9	Rural Generation, Distribution and Storage	Friday, September 29, 2023	1:30 PM – 2:30 PM
10	Rural Generation, Distribution and Storage	Monday, October 9, 2023	1:00 PM – 3:00 PM

D PRIORITY D: STATE ENERGY DATA

The State Energy Data subcommittee meetings were noticed per the State of Alaska Open Meetings Act. Meetings that occurred are listed below and meeting material is available in **Appendix VI**. These meetings were facilitated and led by the University of Alaska Fairbanks and the Alaska Center for Energy and Power (ACEP).

State Energy Data Meetings and Schedule

Number	Subcommittee	Date	Time
1	State Energy Data	Monday, August 7, 2023	1:00 PM – 2:00 PM
2	State Energy Data	Tuesday, August 8, 2023	1:35 PM – 3:05 PM
3	State Energy Data	Thursday, August 10, 2023	9:00 AM
4	State Energy Data	Monday, August 21, 2023	2:30 PM – 3:30 PM
5	State Energy Data	Tuesday, September 19, 2023	1:10 PM – 2:30 PM

PRIORITY E: INCENTIVES AND SUBSIDIES

The Incentives and Subsidies Subcommittee meetings were noticed per the State of Alaska Open Meetings Act. Meetings that occurred are listed below and meeting material is available in **Appendix VI**.

Incentives and Subsidies Meetings and Schedule

Number	Subcommittee	Date	Time
1	Incentives and Subsidies	Tuesday, July 25, 2023	2:00 PM – 3:00 PM
2	Incentives and Subsidies	Monday, August 7, 2023	8:00 AM – 9:00 AM
3	Incentives and Subsidies	Tuesday, August 8, 2023	10:55 AM – 12:25 PM
4	Incentives and Subsidies	Monday, August 21, 2023	8:00 AM – 9:00 AM
5	Incentives and Subsidies	Monday, August 28, 2023	8:00 AM – 9:00 AM
6	Incentives and Subsidies	Tuesday, September 5, 2023	8:00 AM – 9:00 AM
7	Incentives and Subsidies	Monday, September 11, 2023	8:00 AM – 9:00 AM
8	Incentives and Subsidies	Friday, September 15, 2023	12:00 PM – 2:00 PM
9	Incentives and Subsidies	Monday, September 18, 2023	8:00 AM – 9:00 AM
10	Incentives and Subsidies	Tuesday, September 19, 2023	1:10 PM – 2:30 PM
11	Incentives and Subsidies	Monday, October 2, 2023	8:00 AM – 9:00 AM
12	Incentives and Subsidies	Monday, October 9, 2023	8:00 AM – 10:00 AM
13	Incentives and Subsidies	Monday, October 16, 2023	8:00 AM – 9:00 AM
14	Incentives and Subsidies	Monday, October 23, 2023	8:00 AM – 9:00 AM
15	Incentives and Subsidies	Wednesday, November 15, 2023	8:00 AM – 9:00 AM

PRIORITY F: STATUTES AND REGULATIONS

The Statutes and Regulations Subcommittee meetings were noticed per the State of Alaska Open Meetings Act. Meetings that occurred are listed below and meeting material is available in **Appendix VI**.

Statutes and Regulations Meetings and Schedule

Number	Subcommittee	Date	Time
1	Statutes and Regulations	Monday, July 24, 2023	10:30 AM – 11:30 AM
2	Statutes and Regulations	Friday, August 4, 2023	10:30 AM – 11:30 AM
3	Statutes and Regulations	Tuesday, August 8, 2023	1:35 PM – 3:05 PM
4	Statutes and Regulations	Tuesday, August 22, 2023	10:30 AM – 11:30 AM
5	Statutes and Regulations	Tuesday, September 5, 2023	10:30 AM – 11:30 AM
6	Statutes and Regulations	Tuesday, September 19, 2023	1:10 PM – 2:30 PM
7	Statutes and Regulations	Tuesday, October 3, 2023	10:30 AM – 11:30 AM
8	Statutes and Regulations	Tuesday, October 10, 2023	10:30 AM – 11:30 AM
9	Statutes and Regulations	Tuesday, October 17, 2023	10:30 AM – 11:30 AM
10	Statutes and Regulations	Tuesday, October 24, 2023	10:30 AM – 11:30 AM
11	Statutes and Regulations	Wednesday, November 15, 2023	8:00 AM - 9:00 AM

ENERGY SYMPOSIUM MEETINGS AND SCHEDULE

The **20**23 Energy Symposium Series included eight symposiums on energy issues in Alaska which examined the challenges, opportunities, and other factors that Alaska Energy Security Task Force members need to consider as part of the development of a statewide energy plan. The symposium presentations were virtual, with task force members participating as panelists and members of the public attending as participants. More information on the Energy Symposium Series is discussed in **Section III. Energy in Alaska.**

Energy Symposium Meetings and Schedule

Number	Symposium	Date	Time
1	Energy Symposium - Future Natural Gas Supply for the Alaska Railbelt	Thursday, July 13, 2023	11:00 AM – 1:00 PM
2	Energy Symposium -Alaska Rural Energy: Challenges & Opportunities for Reducing the Cost	Thursday, July 20, 2023	11:00 AM – 1:00 PM
3	Energy Symposium -Global Trends and Grid of the Future	Thursday, July 27, 2023	11:00 AM – 1:00 PM
4	Energy Symposium - Railbelt Hydropower Development & Financing: Lessons Learned from the Past, Opportunities for the Future	Thursday, August 03, 2023	11:00 AM – 1:00 PM
5	Energy Symposium - Alaska Energy Statistics & Economics	Thursday, August 17, 2023	11:00 AM – 1:00 PM
6	Energy Symposium - Transmission and Storage: Building a More Resilient Grid	Thursday, August 24, 2023	11:00 AM – 1:00 PM
7	Energy Symposium - Emerging Technologies and Opportunities for Alaska: Small Scale Nuclear	Thursday, August 31, 2023	11:00 AM – 1:00 PM
8	Energy Symposium - RPS and Clean Energy Standards: National Policy Comparisons	Thursday, September 07, 2023	11:00 AM – 1:00 PM

PUBLIC COMMENT AND TESTIMONY MEETINGS AND SCHEDULE

Two periods for in-person, virtual, and written public comment and testimony opportunities were provided as part of regularly scheduled Task Force Meetings. Agendas for both meetings below also included instruction to submit written comments to the Task Force via email. **Public comments received during both meetings and via email is included in Appendix VII.**

Public Comment and Testimony Meetings and Schedule

Number	Meeting	Date	Time
1	Public Testimony	Tuesday, October 10, 2023	2:00 PM – 4:00 PM
2	Public Testimony	Tuesday, October 24, 2023	5:00 PM – 7:00 PM

Public Comments received were further organized by general Task Force related comments and those specific to actions or strategies by energy priority area/subcommittee so they could be efficiently discussed at subcommittee-level and task force level meetings.

Ketchikan, Alaska

SECTION III.

ENERGY IN ALASKA

Anchorage, Alaska

INTRODUCTION

On September 30th, 2022, Governor Dunleavy established the Office of Energy Innovation to provide a central point of focus for Alaska's efforts to reduce the cost of energy for residents. Alaskans suffer from exorbitantly high energy costs, restricted energy supply, and limited opportunities to drive down energy costs to consumers. Consequently, energy security and affordability are critical to Alaska's prosperity going forward.

Alaska is an energy rich state. Over 19 billion barrels of oil have moved through TAPS since 1977 when the pipeline first began operating. There are likely billions more barrels of untapped oil in North Slope reservoirs. There are billions of cubic feet of stranded natural gas stored underground on the North Slope. Finally, Alaska's known coal reserves could power the entire country for decades if not centuries. Hydrocarbons aren't the only energy resource available to Alaskans. Hydropower has been providing clean energy for some Alaska communities for nearly 100 years. This source of clean, renewable energy has significant growth potential in our state.

However, Alaska lacks sufficient electrical transmission infrastructure to provide reliable, redundant, and affordable power distribution in the Railbelt, where over 70% of Alaskans live. In fact, power distribution is nearly non-existent in rural Alaska, where local villages must rely on incredibly expensive village diesel generated power to meet their electrical and heating energy needs. Additionally, Cook Inlet natural gas supplied to Railbelt utilities for electrical and heat energy sources is rapidly decreasing. Existing contracts for Cook Inlet natural gas begin expiring as soon as 2027. This will force Railbelt utilities to find alternate sources of natural gas, at prices significantly higher compared to the current gas supply price.

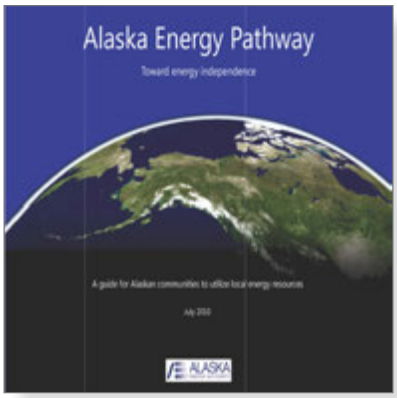
The State of Alaska has previously prepared statewide energy plans, including the 2010 Alaska Energy Pathway and 2019 Energy Atlas as presented below. These previous planning efforts provide current context of this report. In addition, further context is provided through partnership with the University of Alaska as part of the eight meeting Energy Symposium Series, discussed below.

Yukon Mountains, Alaska

PRIOR ALASKA ENERGY PLANS

Alaska Energy Pathway: Toward Energy Independence, July 2010

In January 2009, the Alaska Energy Authority (AEA) published a report titled "Alaska Energy - A first step toward energy independence." This guide is now being used by communities to review available resources and help determine least-cost energy options. A resource map was constructed that indicates the available resources for each community and AEA developed information on options that each community can use to achieve energy savings. This work effort evolved into a new report called the Alaska Energy Pathway, going one step further. The Pathway starts with addressing the 'big picture' by beginning to set an overall policy direction for the State, including aggressive targets for energy efficiency and conservation as well as renewable energy development.

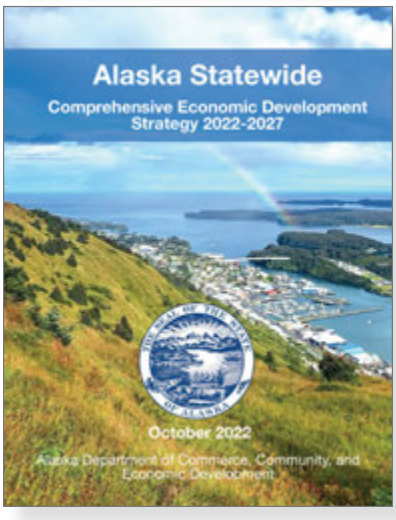


Specific actions identified in this plan include:

- 20% Energy Efficiency and Conservation Improvements by 2020
- 50% Renewable Energy for Electric Power by 2025
- Addressing Climate Change
- Energy Security
- Economic Development
- Investing in Innovation
- Education and Workforce Development
- Alaska's Fossil Energy Future

Renewable Energy Atlas of Alaska, 2019

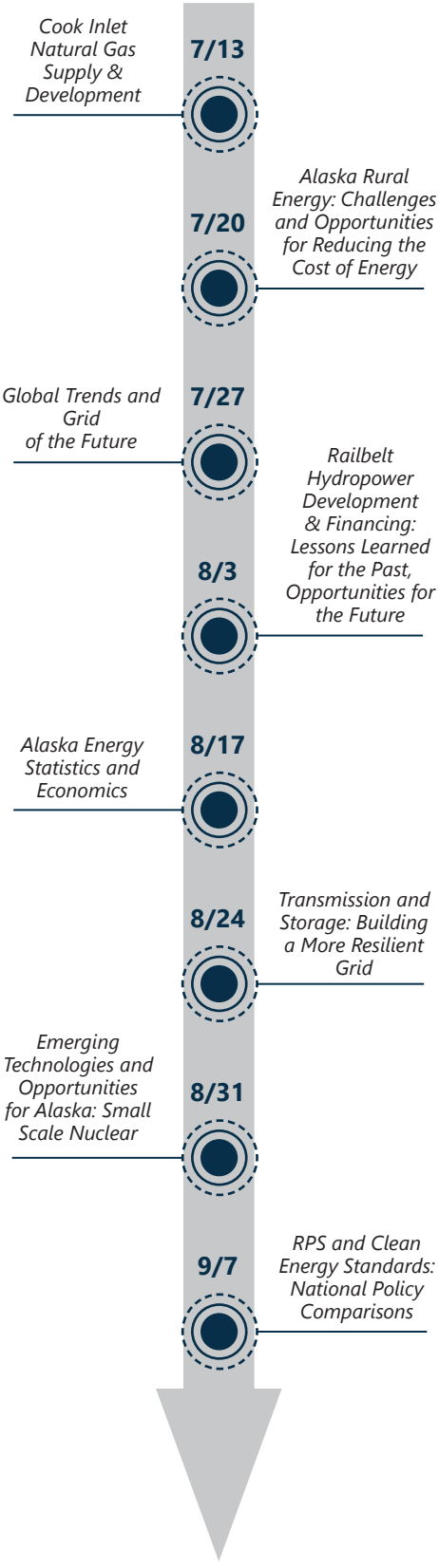
The Renewable Energy Atlas of Alaska is designed as a resource for the public, policy makers, advocates, landowners, developers, utility companies and others interested in furthering the production of electricity, heat and fuels from hydro, wind, biomass, solar, geothermal and ocean power resources. Produced with the use of geographic information system (GIS) technology, this Atlas brings together renewable resource maps and data into a single comprehensive document. The maps contained in this Atlas do not eliminate the need for on-site resource assessment. However, they do provide a high level estimate of the available resources.



Alaska Statewide Comprehensive Economic Development Strategy, October 2022

The Alaska Statewide Comprehensive Economic Development Strategy (CEDS) is a five-year economic development plan for Alaska, active from 2022-2027. Driven by the need to improve the resilience of the state's

2023 Energy Symposium Series Timeline



economy and intentionally lay a foundation for future growth, this plan follows the U.S. Economic Development Administration's Comprehensive Economic Development Strategy (CEDS) guidelines. It takes the place of the prior Statewide CEDS, which was in effect from 2017 to 2022. The Alaska Statewide CEDS is the product of a six-month process reflecting extensive analysis of the state economy, the input of hundreds of Alaskans, and the involvement of dozens of business, government, education, and nonprofit leaders. Although led by state government, it is designed to be used broadly by anyone working to strengthen the Alaska economy.

Economist Scott Goldsmith famously used the metaphor of a three-legged stool to describe Alaska's economic base: oil and gas, federal spending, and everything else.

This plays a major factor in developing the plan's goals, below:

- Strengthen Economic Engines
- Cultivate and Grow Emerging Sectors
- Support a Strong Business Climate and Entrepreneurial Ecosystem
- Build and Update Economic Foundations
- Develop Alaska's Workforce and Human Capital
- Build a Resilient Economy
-

ENERGY SYMPOSIUM SERIES

The Task Force attended an Energy Symposium Series, focused on energy issues in Alaska. The **Energy Symposium Series** included eight symposiums on energy issues in Alaska which examined the challenges, opportunities, and other factors that Alaska Energy Security Task Force members need to consider as part of the development of a statewide energy plan. The symposium presentations were virtual, with task force members participating as panelists and members of the public attending as participants.

Topics of the Energy Symposium Series included:

- Future Natural Gas Supply for the Railbelt
- Reducing the Cost of Rural Alaska Energy
- Energy Statistics & Economics
- Grid of the Future
- Railbelt Hydropower Development & Financing
- Overview of Energy Policy & Planning Foundations
- Transmission & Storage
- Emerging Technologies and Opportunities

Presentation materials from the Energy Symposium Series are included in **Appendix IV**. These topics are also outlined and summarized on the following pages. Links to video recordings of these symposiums are also provided.

July 13th Energy Symposium:

Cook Inlet Natural Gas Supply and Development

Presentations Included:

- **2022 Cook Inlet Gas Forecast**
  Prepared by: Division of Oil & Gas, Alaska Department of Natural Resources
- **Cook Inlet Gas Supply Project Phase I**
  Prepared by: Regulatory Commission of Alaska
- **Alaska Liquified Natural Gas (LNG) Project**
  Prepared by: Alaska Gasline Development Corp

Key Topics Explored:

- Cook Inlet gas won't meet forecasted demand beyond 2026 (current reserves) or early/mid 2030s (assuming incremental supply development)
- Viable options for Cook Inlet Gas supply must be reduced to single sanction decision by December 2023
- Alaska LNG project update

Watch the complete July 13th Energy Symposium recording here.

July 20th Energy Symposium:

Alaska Rural Energy: Challenges & Opportunities for Reducing the Cost of Energy

Presentations Included:

- **Providing Electricity in Rural Alaska**
  Prepared by: Alaska Village Electric Cooperative
- **How is AVEC Doing?**
  Prepared by: Alaska Village Electric Cooperative
- **Standalone Rural Electric Utilities**
  Prepared by: Matanuska Electric Association
- **Public Private Partnerships & The Case for Community – IPPs**
  Prepared by: Northwest Arctic Borough & NANA Regional
- **From the Frontier to the Future**
  Prepared by: Intelligent Energy Systems, LLC

Key Topics Explored:

- Why electricity is expensive in rural Alaska?
- Strategies discussed to reduce power cost
- Case Studies and examples from standalone utilities and cooperatives
- Public Private Partnerships – IPPs

Watch the complete July 20th Energy Symposium recording here.

July 27th Energy Symposium:

Global Trends and Grid of the Future

Presentations Included:

- **Energy Transformation – It can Happen Faster than you Think! South Australia as a Case Study,**
  Prepared by: Sandia National Laboratories
- **Opportunities for Electric Load Growth in Alaska**
  Prepared by: Sandia National Laboratories
- **Insights into the Icelandic Energy Market**
  Prepared by: Alaska Center for Energy and Power

Key Topics Explored:

- Heating space and water is the biggest energy user in Alaska
- Cold-climate air source heat pumps (ccASHP): problems and solutions with widespread heat pump adoption and solutions
- Potential Solutions include: dual fuel heat pumps, better building envelope, geothermal heat pumps

Case Studies:

- Proliferation of diverse energy in South Australia
- Overview of Iceland's energy market and how it compares to Alaska

Watch the complete July 27th Energy Symposium recording here.

August 3rd Energy Symposium:

Railbelt Hydropower Development & Financing: Lessons Learned from the Past, Opportunities for the Future

Presentations Included:

- **Small Hydropower in Southcentral Alaska**
  Prepared by: Polarconsult Alaska, Inc.
- **Bradley Lake Operations and Governance**
  Prepared by: Bradley Lake Project Management Committee
- **Railbelt Hydropower – Current & Upcoming Projects**
  Prepared by: Alaska Energy Authority
- **Susitna-Watana Hydro**
  Prepared by: Susitna-Watana Hydro

Key Topics Explored:

- Dixon Diversion
- Susitna-Watana Hydro
- Southcentral small hydro
- Bradley Lake Operations and Governance

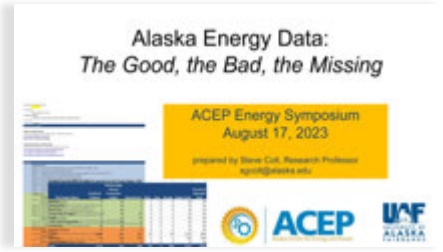
Watch the complete August 3rd Energy Symposium recording here.

August 17th Energy Symposium:

Alaska Energy Statistics & Economics

Presentations Included:

- **Alaska Energy Data: The Good, the Bad, the Missing**
  Prepared by: Alaska Center for Energy and Power
- **Alaska Comprehensive Economic Development Strategy (CEDS) Overview**
  Prepared by: UA Center for Economic Development, Alaska DCCED
- **CEDS Energy – Specific Goals & Objectives**
  Prepared by: Department of Commerce, Community, and Economic Development



Key Topics Explored:

- Need for central energy data repository with regular maintenance and updates
- Unreliable/uncleaned data is worse than no data
- There is almost zero measured fuel oil consumption data
- Impact of EVs and Heat Pumps

Watch the complete August 17th Energy Symposium recording here.

August 21th Energy Symposium:

Transmission & Storage: Building a More Resilient Grid

Presentations Included:

- **Energy Storage Options and Selection Considerations**
  Prepared by: Sandia National Laboratories
- **Beneficial and Equitable Electrification**
  Prepared by: Alaska Center for Energy and Power
- **Tidal Power in Alaska**
  Prepared by: Alaska Center for Energy and Power

Key Topics Explored:

- Energy storage system (ESS) selection is scenario specific, key scenario considerations
- Beneficial and Equitable Electrification
- Tidal Power in Alaska: Policy & Permitting Recommendations

Watch the complete August 24th Energy Symposium recording here.

August 31th Energy Symposium:

Emerging Technologies and Opportunities for Alaska: Small Scale Nuclear

Presentations Included:

- **Copper Valley Electric Association Ultra Safe Nuclear**
  Copper Valley Electronic Association
- **Nuclear Energy: State of Micro Reactors**
  Nuclear Energy Institute
- **Small Nuclear Power: an Option for Alaska?**
  Alaska Center for Energy and Power, University of Alaska Fairbanks

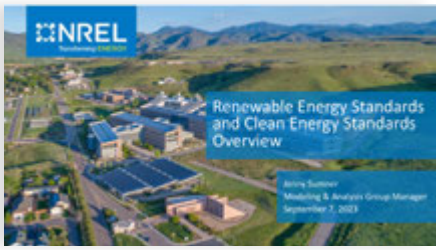
Key Topics Explored:

- Copper Valley – Micro Modular Reactor Energy Systems Overview, pre-feasibility study process overview and relevant stakeholder engagement.
- Micro Reactor Technology – feasibility, cost-competitiveness, financing, workforce
- Community members generally supportive of small scale nuclear after proper outreach and community engagement (information changes perspectives)

Watch the completed August 31st Energy Symposium recording here.

September 7th Energy Symposium:

RPS and Clean Energy Standards: National Policy Comparisons



Presentations Included:

- **Renewable Energy Standards and Clean Energy Standard Overview**
  Prepared By: National Renewable Energy Laboratory (NREL)

Key Topics Explored:

- Key Renewable Portfolio Standard Elements
- Clean Electricity Standards Overview and Design Elements
- Renewable Portfolio Standard policy comparisons at the national level

Watch the complete September 7th Energy Symposium recording here.

SECTION IV.

ENERGY PRIORITIES

Anchorage, Alaska

This section is divided into the following Energy Priorities:

Priority A. Railbelt Transmission, Generation, and Storage

Priority B. Coastal Generation, Distribution, and Storage

Priority C. Rural Generation, Distribution, and Storage

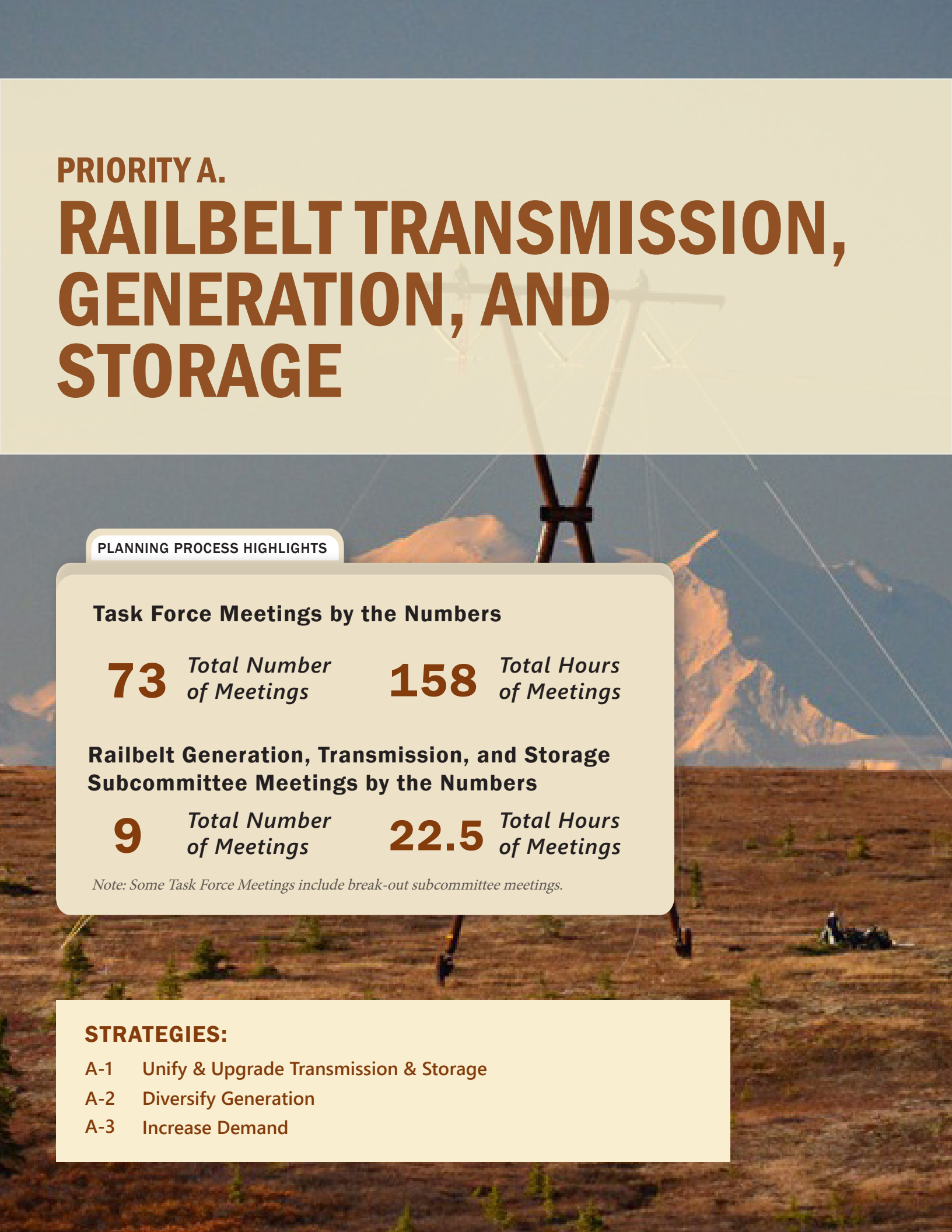
Priority D. State Energy Data

Priority E. Incentives and Subsidies

Priority F. Statutes and Regulations

PRIORITY A.

RAILBELT TRANSMISSION, GENERATION, AND STORAGE



PLANNING PROCESS HIGHLIGHTS

Task Force Meetings by the Numbers

73 *Total Number of Meetings*

158 *Total Hours of Meetings*

Railbelt Generation, Transmission, and Storage Subcommittee Meetings by the Numbers

9 *Total Number of Meetings*

22.5 *Total Hours of Meetings*

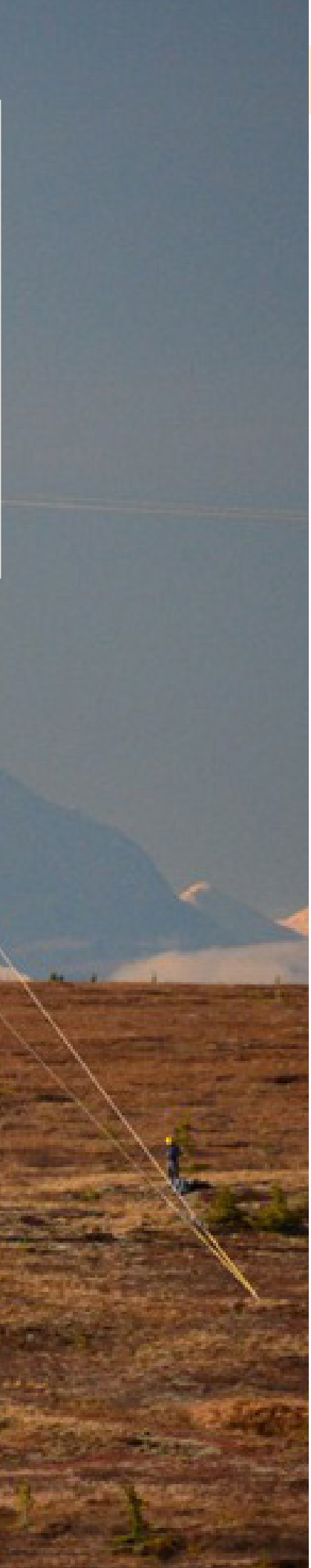
Note: Some Task Force Meetings include break-out subcommittee meetings.

STRATEGIES:

A-1 Unify & Upgrade Transmission & Storage

A-2 Diversify Generation

A-3 Increase Demand



INTRODUCTION

The Railbelt Generation, Transmission, and Storage (RGTS) subcommittee of the Task Force was created to develop an energy plan that will move the Railbelt towards energy independence while lowering the cost to its residents over the long-term. In order to complete this plan, it was important to understand the current state of our energy portfolio. Since Statehood, the Railbelt utilities and their customers have benefited from the significant natural gas finds in the Cook Inlet. Over time, this basin has supported approximately 80% of the power generation, and a majority of the population hubs' space and water heating needs.

Sixty years later, local supplies of natural gas are getting harder to find and the quantities of gas behind pipe and available for market consumption are dwindling. This fact is causing commodity prices to increase, presenting the region with an opportunity to diversify our power generation and build for the future. It also forced the RGTS to acknowledge the fact that we must include solutions for space and water heating in our plan recommendations. In order to develop our recommended plan, the RGTS determined the most efficient approach would be to establish long-term, mid-term, and short-term goals that reflect our desired outcomes here along the Railbelt. Here are the recommended goals:

- Short-term: Minimize regret cost while providing reliable service.
- Mid-term: Invest in infrastructure improvements to advance our long-term goal of energy diversification.
- Long-term: Significantly diversify power generation with an emphasis on in-state, reliable, and more affordable clean energy.

The RGTS was motivated to seek transformational approaches to reach these goals that might provide electrical energy to residents at a target price of $0.10/kwh in the future. The RGTS reviewed numerous generation and transmission configurations and strategies from publicly available data but did not complete independent or internal cost estimates in developing action items and strategies.

In the short-term, the RGTS acknowledges that continued reliability along the Railbelt generation and transmission system may require certain actions that are likely to increase costs. The expected increase in costs is directly tied to the local gas supply market in Cook Inlet. There are no other options for electric and gas utilities that can reliably serve the local demand in the short to mid-term. The magnitude of the rising costs, and the ability to arrest and then reverse these rising costs as energy sources are diversified, will depend upon our collective response to the recommendations set forth within. Therefore, it is important that investments in the short term do not hinder mid-term and long-term goals of infrastructure improvements for diversified power generation sources.

In the mid-term (2-20 years), significant state and federal investment must be made in energy and power infrastructure to enable the long-term goal of diversified, local, reliable, and affordable energy. Alaska must invest in its future. Transmission system upgrades must be made to allow cost competition to optimize all generation, including clean energy. Energy storage is another much needed investment area; where it is viewed that shared costs and control will help optimize overall energy cost across the Railbelt and enable diverse generation forms to expand in the Railbelt. Transmission upgrades, further deployment of energy storage and improved operating models are necessary to facilitate economic dispatch of electrical energy.

In the long term, for 2040 and beyond, the RGTS has established a goal that the system for generation, transmission and space heating within the Railbelt should reflect a significant diversification of energy supply from 2023 metrics and be affordable, sourced within the State of Alaska and, most importantly, reliable. Energy generation sources also need to be considered in the context of a sustained supply for the years that follow.

STRATEGY A-1:
Unify & Upgrade Transmission & Storage

ACTIONS

A-1.1 Unify all existing transmission assets along the Railbelt and Bradley Lake under Alaska Energy Authority or a new not-for-profit regulated utility.

Purpose:
Provide a strong transmission system which enables new generation projects to integrate to the grid. Investing in transmission and storage infrastructure and unifying assets will enable the long term goal to significantly diversify Railbelt generation and provide energy that is reliable, affordable and generated in-state. We recommend accomplishing this by:

- Unify all existing transmission assets along the Railbelt and Bradley Lake under AEA or a new not-for-profit regulated utility.
- Identify state and federal funding opportunities for transmission upgrades
  - Complete HVDC transmission line from the Kenai peninsula
  - Complete HVDC transmission line from Anchorage to Fairbanks
  - Complete additional necessary system upgrades
- Develop transmission, operation, and control reform with a regulated version of management committee.
- Establish a single transmission rate for the Railbelt.
- Align ERO statute and regulations with transmission reform.

Background:
The Railbelt system is made up of five electric utilities providing service to the communities from the Kenai peninsula to Fairbanks. These five utilities all generate power through various means including hydro-electric generation, natural gas powered generation and coal fired generation. The transmission system ownership and operatorship is split up across its length and transmitting generation from one region to another currently incurs wheeling charges which may be multiple depending on the number of operating areas energy is transmitted across. The transmission lines have current bottleneck points and generally lack redundancy. Battery energy storage systems are being added to the grid to stabilize operations and additional storage is needed to enable generation diversification and ensure reliability.

The AEA, in partnership with the five Railbelt utilities, has identified several opportunities for transmission line upgrades and battery energy storage systems that will reduce existing constraints on the Railbelt grid by increasing the Kenai Peninsula's transmission capacity to export power from Bradley Lake hydropower, while also allowing for the integration of additional clean energy generation.

Further, AEA and Railbelt utilities are seeking federal funding to construct a second line between Soldotna and Healy to allow Bradley Lake power to reach consumers along the Railbelt even when one line is out of service on either a scheduled or unscheduled basis.

Benefits:

- Reduces transmission constraints on Railbelt grid, while also allowing for the quicker integration of additional clean energy generation.
- Provides system redundancy, resilience, and increases reliability.
- Benefits utilities and ratepayers by sharing power throughout the region.
- Reduces costs for consumers and promotes job creation.
- Coordinates planning, financing, and construction of new infrastructure.
- Augments and diversifies Environment, Social, and Governance investment portfolio holdings.

Expected Results:

This strategy will result in a more resilient and reliable transmission and electric grid system that will lower rates, help bring online clean energy, reduce costs for consumers, and promote job creation.

Wasilla, Alaska

STRATEGY A-2:
Diversify Generation

ACTIONS

A-2.1 Adopt Clean Energy Standard and incentives to diversify generation.

A-2.2 Modify existing statute(s) requiring the Regulatory Commission of Alaska to consider long term diversification goals when approving additional/new Railbelt power generation.

A-2.3 Progress known near term energy diversification projects to a go/no-go decision:
- 2.3.1: Dixon Diversion

A-2.4 Progress known long term energy diversification projects to a go/no-do decision:
- 2.4.1: Susitna Watana
- 2.4.2: AKLNG, Bullet Line & Alternatives

Alaska Intertie, Alaska (Source: GVEA)

Purpose:
Encourage and coordinate the diversification of Railbelt generation assets through projects and policy that provide opportunities to maximize energy cost savings.

Background:
Today, 80-90% of the Railbelt's energy (heat and power) is generated using Cook Inlet (CI) natural gas, a supply source which is forecasted to fall short of demand as soon as 2027. Alaska utilities may likely need to import Liquefied Natural Gas (LNG) to meet short term supply needs and this is anticipated to increase the cost of energy and introduces potential energy security concerns. In order to ensure a secure, local supply of energy that is affordable and reliable, the Task Force Railbelt Subcommittee set a long term goal of significantly diversifying the Railbelt's energy generation.

Today, many proven and cost competitive electricity generation technologies exist and are ready for at-scale deployment across the Railbelt, and the state as a whole. Alternative technologies for central heat generation are not as ready to deploy and distributed heat generation solutions such as heat pumps point to electricity generation as their source. Based on this, the Railbelt Subcommittee recommends a near term focus on diversifying electricity generation. This will conserve natural gas for heat while increasing energy security with local and diverse electricity generation projects.

To enable this strategy the Railbelt Subcommittee supports the state adopting a Clean Energy Standard which would set electricity diversification goals. These goals should be supported with incentives rather than penalties to ensure affordable, reliable power is delivered to rate-payers. The Railbelt Subcommittee also recommends modifying state statutes to provide the Regulatory Commission of Alaska (RCA) the ability to value generation diversification (in addition to price) when reviewing and approving contracts.

The Railbelt Subcommittee did not complete comprehensive analysis or cost estimates for potential generation projects and ultimately all technologies should compete to bring the most affordable, diverse, reliable energy to the Railbelt. That said, there are projects which have previously been proposed or are currently being worked and the Subcommittee supports taking these projects through feasibility such that a "go/no-go" decision can be made. Alaska has several projects in various stages of development and permitting that could provide diversified renewable and clean power generation for Railbelt utilities including the Dixon Diversion project at Bradley Lake, and the potential mega-project at Susitna-Watana. Additionally, the Alaska LNG (AKLNG) project has the potential to open vast quantities of trapped North Slope natural gas for uses across the interior and south-central Alaska. The AKLNG is strategic in that it provides a local gas supply for heat and electricity base load for generations to come.

Benefits:
Encouraging and promoting diversification of power generation in the Railbelt and across Alaska may provide reliable, low cost energy for Alaskans.

Expected Results:
Greater diversification of power generation to provide reliable, lower cost electricity, for Railbelt rate payers.

"Today, 80-90% of the Railbelt's energy (heat and power) is generated using Cook Inlet (CI) natural gas, a supply source which is forecasted to fall short of demand as soon as 2027."


Seward Highway Transmission Line


Houston Solar Field
Houston, Alaska

STRATEGY A-3:
Increase Demand

ACTIONS

A-3.1 Significantly increase load to drive down energy rates.

- 3.1.1: RFP for industrial customers
- 3.1.2: Energy tax credit for new industrial customers
- 3.1.3: Identify "load-friendly" areas already in-place

Port of Alaska, Anchorage, Alaska

Purpose:
Significantly increase load to drive down energy rates.

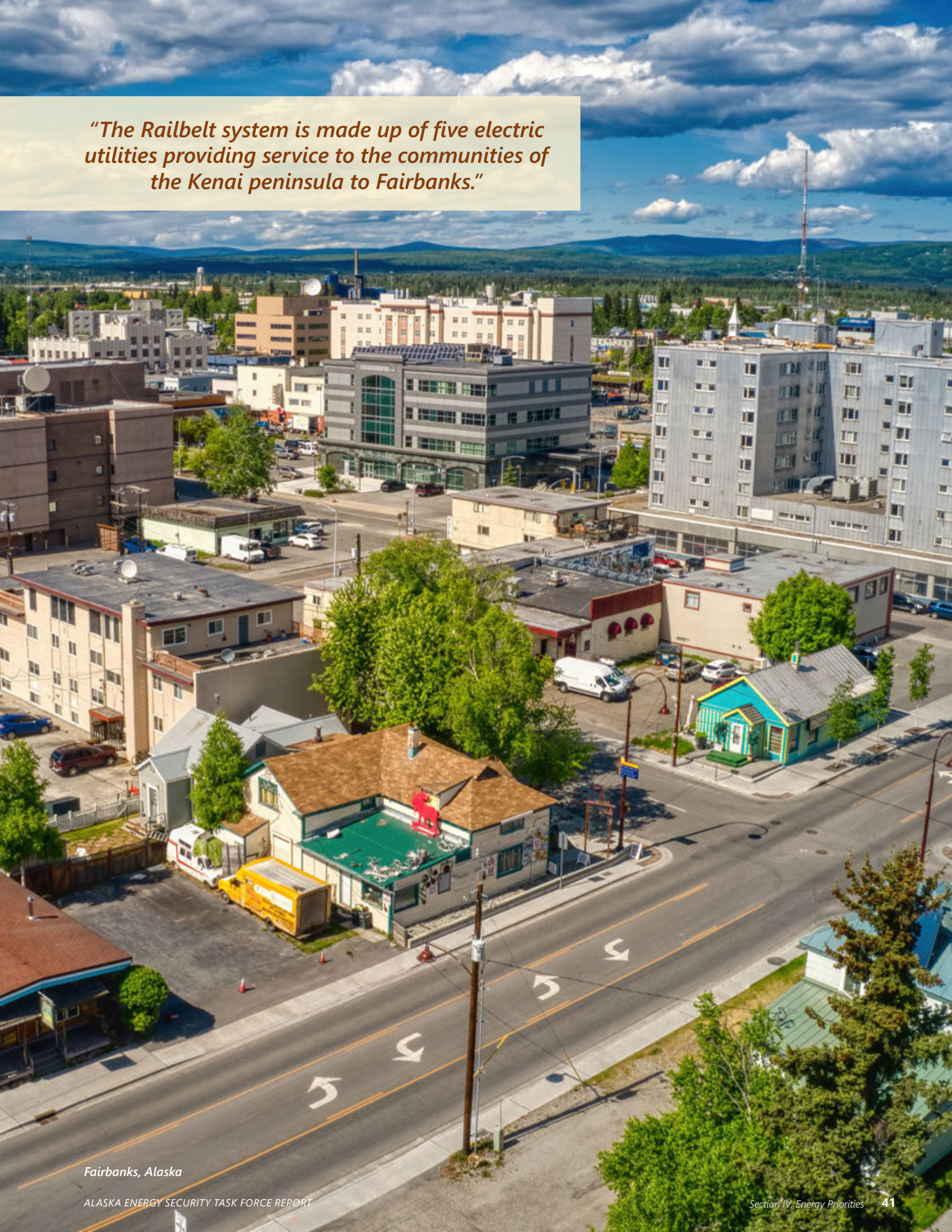
Background:
All other things being equal, if the fixed infrastructure costs of a power grid are spread over more customers and greater energy loads, customers will end up paying less on a per-kWh basis. This strategy has been used in Iceland, for example, where a high volume of production and sales have created efficiencies and economies of scale. According to analysis provided by Holdmann and Gudleifsson (in preparation), Iceland's total electric production and Alaska's tracked very closely until the mid-1990s, as did the delivered cost for electric power. After that point in time, the trajectories diverged significantly both in terms of annual production and sales as Iceland actively courted and attracted large industry (aluminum smelting) to its electric grid. This new industry increased Iceland's energy demand by four-fold. Iceland's cost of power delivered to the customer's meter is now $0.7-$0.13 per kWh, as compared with $0.19-$0.26 for power from Alaska's Railbelt grid.

A similar approach could be undertaken on Alaska's Railbelt to drive the cost of power down for all customers and spur continued economic growth. Examples of new, large customers on the Railbelt could include ore processing of locally-resourced materials as well as new fuel generation production facilities for the transportation industry (air carriers, shipping, etc.), among others. A key insight is that Iceland simultaneously sought out new industry and committed to lower than current energy costs to incentivize industry to select Iceland as the preferred location.

Benefits:
Incentivizing and attracting large industry customers to Alaska's Railbelt to increase electricity production demand, following a similar model to Iceland, could help lower the cost per-kWh for all Railbelt customers.

Expected Results:
The Railbelt will significantly increase its load to drive down prices for all consumers and spur economic development.

"The Railbelt system is made up of five electric utilities providing service to the communities of the Kenai peninsula to Fairbanks."

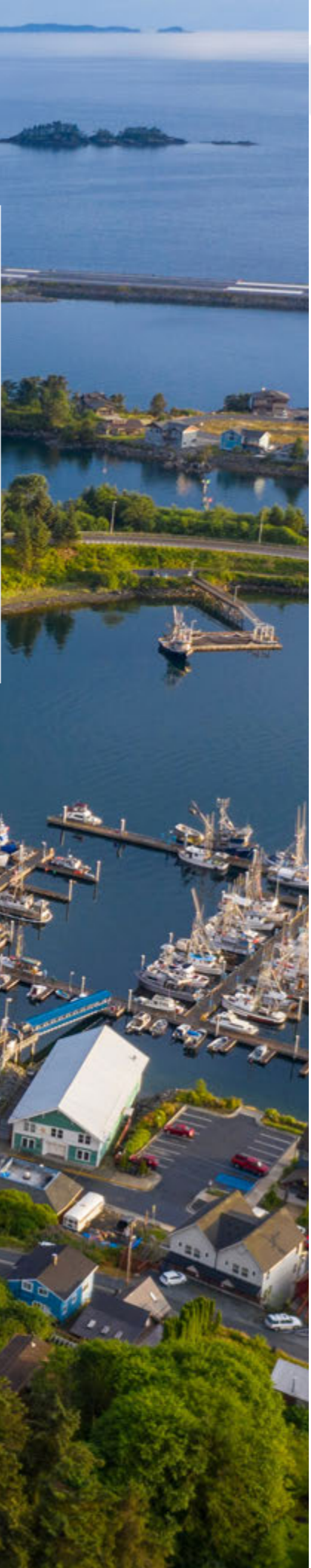


Fairbanks, Alaska

PRIORITY B.

COASTAL GENERATION, DISTRIBUTION, AND STORAGE

Sitka, Alaska



INTRODUCTION

The Coastal Subcommittee's strategies and actions are meant to support the overall Alaska Energy Security Task Force goal of identifying opportunities to lower the cost of energy in Alaska for Alaskans. The Coastal Subcommittee settled on four high-level strategies supported by twelve specific action recommendations focused on lowering energy costs for Alaskans living in coastal areas of the state. Our strategies recommend Alaska and Federal policy updates to allow streamlined project identification, planning, funding/financing and permitting. The Market Initiatives strategy seeks to maximize use of existing energy generation and transmission assets and promote new renewable energy assets to lower energy costs for Alaskans and their industries. Finally, as hydropower is one of the primary sources of energy generation for many coastal Alaskan communities, the Alaska Hydropower strategy recommends enhancing Alaska's policies to fast-track hydropower for affordable, secure energy Alaskans expect by optimizing Alaska public policies and investments to promote and advance execution-ready hydropower projects to lower the cost of energy and to bolster community and regional energy security.

PLANNING PROCESS HIGHLIGHTS

Task Force Meetings by the Numbers

73 *Total Number of Meetings*

158 *Total Hours of Meetings*

Coastal Generation, Distribution, and Storage Subcommittee Meetings by the Numbers

12 *Total Number of Meetings*

14.5 *Total Hours of Meetings*

Note: Some Task Force Meetings include break-out subcommittee meetings.

STRATEGIES:

B-1 Alaska Market Initiatives

B-2 Alaska Policy Recommendations

B-3 State of Alaska Coordination with Federal Agencies and Federally Recognized Tribes Recommendations

B-4 Alaska Hydropower Generation Recommendations

STRATEGY B-1:
Alaska Market Initiatives

ACTIONS

B-1.1 Integrate and promote heat pump technology and systems (ASHP, SWHP, GSHP) as an alternative energy resource in Coastal Alaska.

B-1.2 Plan, finance, and support the execution of Shore power at Public and Private Cruise Docks to Sell Excess Energy to Cruise Ships.

B-1.3 Beneficially electrify the Alaska Ferry Fleet to lower the cost of transportation, emissions, and assist in reducing the cost of power in coastal communities.

B-1.4 Identify and support the colocation of industrial load (e.g. data servers) with Alaska hydropower facilities for synergies to lower energy costs.

Cruise Ship at Port, Juneau, Alaska

Purpose:
Maximize utilization of existing energy generation and transmission and promote new renewable energy assets to lower energy costs for Alaskans and their industries through market initiatives and expansion.

Background:
Energy generation and transmission assets, like power plants and electricity distribution grids, have significant upfront costs. For these assets to be cost-effective and viable, they need to be built at a particular scale, benefiting from what is known as "economies of scale," the more significant the operation, the more cost-effective it becomes per unit of energy produced or transmitted. Market initiative and expansion of electricity is known as beneficial electrification. "Beneficial Electrification" refers to replacing direct fossil fuel use for heating and transportation with electricity to reduce overall emissions and energy costs while simultaneously delivering broader environmental and societal benefits. The primary aim is to shift end-use energy sources to cleaner, renewable electricity sources.

Energy Generation and Transmission assets require minimally sufficient economies of scale to enable minimum viable generation projects and transmission to be built or expanded. Expanding energy markets through market initiatives that serve multiple goals creates sufficient economies of scale to lower energy costs through demand creation for critical energy generation and transmission assets, thereby increasing affordability, reliability, energy security, and grid resilience that reduce the cost of energy through displacement of higher cost fuel sources and by creating new energy demand. These market initiatives also create family-wage-sustaining jobs in Alaska.

Benefits:
The proposed market initiatives create multiple economic and societal benefits while providing Alaskans lower cost energy.

The Alaska Market Initiative Action Items have a range of planning, development, financing, implementation, and operation implementation timelines extending from the immediate to the long-term horizon for Alaska's Energy Plan.

Expected Results:
Strategically planned market initiative actions with tactical implementation focused on fully utilizing generation and transmission current and future assets will optimize State Alaska's Energy plan to lower Alaskans' energy costs (electric, heating, transportation).

ACTIONS (CONT.)

B-1.5 Identify, assist, and fund Battery Energy Storage Systems (BESS) and other Energy Storage Systems (ESS) for successful integration into Coastal communities to increase energy security, grid resilience and to lower energy costs.

Cordova, Alaska

STRATEGY B-2:
Alaska Policy Recommendations

ACTIONS

B-2.1 Establish, require, assist, and implement community Integrated Resource Plans (light) to forecast energy demand and generation for community and regional future energy needs and to lower energy costs.

B-2.2 Strengthen Alaska's Net Metering energy framework, tariffs, and regulations for Alaska's diverse stakeholders to promote net metering renewable energy investments.

B-2.3 Strengthen and streamline the State of Alaska's internal state regulatory and land use administrative processes to accelerate approval to advance strategic energy projects and transmission for regional energy security and lower energy costs.

Kodiak, Alaska

Purpose:
Enhance Alaska's departmental and regulatory policies to spur and sustain renewable energy and transmission development to cut energy costs and advance economic prosperity for Alaska.

Background:
Alaska policies, while unintended, can prevent, stall, or, in some cases, prohibit the permitting and necessary governmental authorizations to timely and optimally develop and advance renewable energy and transmission assets required to move Alaska forward from a developing state status to a first-world energy state that Alaskans deserve. While there is not one solution, the Administration can take many internal steps and actions to create a unity of effort among State agencies with disparate missions and objectives. An overarching Energy Plan that directionally provides State agencies the authority and motivation to help the Governor successfully implement that State Energy Plan and achieve recommended action is doable with a coordinated effort.

Alaska can transcend policies that have been focused on the past or regulatory mission and should directionally (as opposed to aspirationally) incorporate the Governor's directives to implement the State Energy Plan in concert with regulatory balance, protecting our environment while streamlining processes, procedures and producing results to lower the cost of energy for Alaskans. Regardless of whether the policy directive is called a "unity of purpose and effort" or an all-hands-on-deck policy, Alaskans are better served through introspection of how we can and should do better, with concentrated and collective efforts to do better in serving Alaskans achieve lower cost energy now and for future generations.

Ketchikan, Alaska

ACTIONS (CONT.)

B-2.4 Strategize and prioritize State of Alaska funding to match federal funding and federal financing to build and expand sustainable transmission and distribution lines in Alaska to bring Alaska on par with the US transmission systems for Alaskan energy security and lower energy costs.

B-2.5 Establish and provide valuable energy planning and modeling metrics from State data sources, where available and requested (such as DMV electric vehicle registrations and Air Source Heat Pump (ASHP) installation) by individual communities.

B-2.6 Recruit, train, and enhance Alaska workforce with technical skills and training for advancing beneficial electrification to lower Alaska energy costs and to sustain Alaska's growing energy infrastructure.

Benefits:
The proposed Alaska Policy Recommendations create multiple economic and societal benefits while providing Alaskans with administrative purpose and collective effort to find and exploit synergies to lower the energy cost for Alaskans in concert with Departmental missions and goals.

The proposed Alaska Policy Recommendation creates multiple economic and societal benefits while providing Alaskans lower cost energy.

Expected Results:
Administration and AEA strategic maturation of the Task Force Alaska Policy Recommendations combined with efficient and well thought out implementation focused on light Integrated Resource Planning, reducing State of Alaska barriers and bottlenecks, optimizing federal funding for the strategic achievement of goals, tactical and practical implementation of can do, how we get to "yes" policies will reduce the cost of power for Alaskans today and leave an energy legacy for generations of Alaskans to follow.

STRATEGY B-3:
State of Alaska Coordination with Federal Agencies, State and Federally Recognized Tribes and Alaska Native Corporations Recommendations

ACTIONS

B-3.1 Establish an Alaska/federal Clean Energy Policy Force to develop, collaborate, and prioritize State energy, plan, goals, and rights to optimally advance renewable energy and transmission on federal lands.

B-3.2 State of Alaska partners and collaborates with Federally recognized Alaska tribes and federal agencies to develop mutually beneficial Energy Development and Transmission/Distribution to advance the State Energy Plan to lower the cost of energy.


Ketchikan, Alaska

Purpose:
Refine federal policy to bolster Alaska's clean energy and support tribes in securing affordable energy. Directionally (as opposed to aspirationally) advance Alaska's Energy Plan priorities to promote and develop clean energy generation and transmission assets through negotiating and influencing federal agencies for proactive federal energy development policy modifications and revisions and to collaborate and assist Alaska's federally recognized tribes in obtaining lower cost energy in Alaska.

Background:
The State of Alaska has the highest disparity of power costs from one community or region to another. Some of America's highest-cost energy communities amplify that these communities are in the Tongass and Chugach Forests lands controlled by the US Department of Agriculture (USDA) US Forest Service (USFS). Currently, there is limited or no State input or consultive rights provided by the State of Alaska to affect the federal policies of the federal government in a collaborative and constructive dialogue that lowers the cost of energy for Alaskans and reduces emissions and other national goals of energy security and lessening dependence on fossil fuels.

RS 2477 (Revised Statute 2477) refers to a provision in the Mining Act of 1866, which allowed for the construction of highways across public lands not reserved for public uses. In simple terms, RS 2477 granted a "right-of-way" to build roadways and transmission lines over public land that provide access to renewable energy project areas.

Section 4407 of Public Law 109-59 (Section 4407) of a 2005 federal transportation funding bill refers to a Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). SAFETEA-LU was

a bill sponsored by the late Congressman Don Young and was signed into law by President George W. Bush in August 2005. Section 4407 provides as follows: Notwithstanding any other provision of law, the reciprocal rights-of-way and easements identified on the map numbered 92337 and dated June 15, 2005, were enacted into law. Section 4407 Rights of Way provides roadways and transmission line corridors over the Tongass National Forest, instrumental for the State of Alaska's interests in providing access to renewable energy project areas and transmission lines. However, Tongass Forest Land Management Plans, Land Use Designations (LUD), and other federal regulations are at odds with the State exercising its rights.

Coastal Alaska communities also want to lower energy, heating, and transportation costs. Federally Recognized Tribes actively explore energy solutions and are supported in tribal energy endeavors by federal resources mutually beneficial to the State of Alaska's interests. Tribal goals align with the broader Alaska state mission of making energy more affordable for all residents. Additionally, many federally recognized tribes have designated staff working specifically on energy projects, often in collaboration with federal entities. By coordinating and collaborating, the State of Alaska, Federally Recognized Tribes, and our shared Alaskan communities can assist the wider Alaskan population by cooperatively developing and sharing efficient energy solutions. This joint party effort can enhance the creation, sharing, and use of energy across the State.

Benefits:
The development of state policies and goals to negotiate and carry out with federal agencies for developing cost-effective renewable energy and transmission lines on federal lands lowers energy costs for Alaskans while assisting federal agencies in meeting national clean energy goals through mutual State-Federal cooperation, respect, and understanding. The proposed Alaska Policy Recommendations create multiple economic and societal benefits while providing Alaskans lower cost energy.

The State of Alaska and federally recognized tribes have mutually shared goals to provide low-cost heating, electricity, and transportation to Alaskans in our Alaskan communities. By identifying and sharing information, plans, and initiatives and establishing a framework to advance energy generation, transmission, distribution, storage, and heating solutions, the State of Alaska and Tribes can optimize resources and benefits to lower the cost of energy and increase energy security for Alaskans.

This strategy has a blend of immediate and short-term tasks for implementation.

Expected Results:
The State of Alaska, with careful and planned implementation of these recommendations, can gain common ground with federal agencies and tribes and advance and promote Alaska's renewable energy development with cooperation and support from the federal government and Alaska's 229 federally recognized tribes to achieve national purposes while reducing the energy cost of Alaskans. The expected results and outcomes from this cross-agency, inclusive tribal interest effort will lower Alaska's energy costs and reduce the dependency on imported fuels, using local Alaska land and energy resources for the benefit of Alaska.

Haines, Alaska

"The expected results and outcomes from this cross-agency, inclusive tribal interest effort will lower Alaska's energy costs and reduce the dependency on imported fuels, using local Alaska land and energy resources for the benefit of Alaska."

STRATEGY B-4:
Alaska Hydropower Generation Recommendations

ACTIONS

B-4.1 Foster, support, and assist Hydropower development and their transmission in Alaska to lower energy costs, provide energy security, and spur economic growth, job creation, and prosperity for Alaska.

Unalasaka, Alaska

Purpose:
Enhance Alaska's policies to fast-track hydropower for affordable, secure energy Alaskans expect by optimizing Alaska public policies and investments to promote and advance execution-ready hydropower projects to lower the cost of energy and to bolster community and regional energy security that Alaskans deserve and expect.

Background:
The foundation of Alaska's most cost-effective and affordable energy lies in its legacy hydropower infrastructure, some of which dates back decades or even a century. There is no cheaper energy form in Alaska than old hydropower, and Alaska cannot achieve old hydropower without proactively supporting and investing in new hydropower. Hydropower is a tried and proven Alaska energy resource, and with proper maintenance, these hydropower systems have a life expectancy of over 100 years. Once financing debt is paid, the hydropower project yields consistent, sustainable, renewable, and lowest-cost power, benefiting multiple generations of Alaskans and economic prosperity well into the future.

Historically, Alaska's economic vitality is due directly to its hydropower assets. Whether the small local hydropower systems that powered early mining and fishing sectors or the subsidized projects like Bradley Lake and Snettisham Hydro and the hydropower investments from the era of the Four Dam Pool, these assets have consistently provided low-cost energy, driving Alaska's prosperity.

In Alaska and across the US, the National Hydropower industry is expanding to include river hydrokinetics, tidal, and marine power projects as US hydropower projects. As these technologies evolve, Alaska's extensive coastline and lengthy rivers — greater than all other states combined — leverage Alaska to capitalize on these innovations and benefit from these advancements to provide energy security and lower the energy cost for Alaska.

Today, hydropower accounts for 29% of Alaska's electricity. This reliable power source underpins vital sectors of the Alaskan economy: mining, fisheries, military, and tourism, ensuring energy security and economic stability for the state.

Benefits:
Hydropower in Alaska is not just an energy source; it is Alaska's energy DNA. Historically, hydropower has consistently delivered the state's most affordable power. By investing in hydroelectric infrastructure and related transmission, Alaska is not just tapping into a proven energy solution but securing Alaska's energy future. This investment strategy, rooted in a track record over a century, offers unmatched cost-effectiveness in the long run and past most investment cycles. While the initial outlay is significant, the long lifecycle of hydropower — exceeding 100 years — ensures that Alaska is planting seeds for today's needs and reaping energy dividends for future generations with sustainable, clean energy. Investing in hydropower assets is our Alaska commitment to Alaska's proven energy model for a brighter, more affordable, energy-secure future for Alaska.

The Alaska Generation Strategy for fostering hydropower has a blend of Immediate for execution-ready hydropower and short-term, mid-term, and long-term tasks for hydropower in earlier analysis and development stages.

Expected Results:
The State of Alaska can take an active, willful, and calculated role in lowering the energy cost for Alaskans, energy security, and economic prosperity by effectively guiding hydropower development policy and investments in hydropower assets and related transmission infrastructure safeguarding Alaska's energy future with an Alaskan tried and proven energy model.


Juneau, Alaska

Cordova, Alaska

PRIORITY C.

RURAL GENERATION, DISTRIBUTION, AND STORAGE

Perryville, Alaska

INTRODUCTION

The vast majority of Alaska's rural communities have significantly higher cost of energy than more urbanized areas. This is primarily due to remote village locations having to rely on diesel powered generators supplying power for individual villages. The cost to purchase, transport and store diesel fuel drives these higher energy generation costs. The Rural Subcommittee identified five strategies to target opportunities to help lower the cost of energy generation in rural Alaska. Increased access to capital and infrastructure investments by the state and federal government are two of these strategies. Lowering operational costs of existing energy generation also provide actions to pursue. The previous three strategies can be supported by increasing economies of scale, either by connecting communities or attracting industrial partners to increase demand, and better decision making concerning energy generation, storage, distribution based on access to better data is the final rural subcommittee strategy. Alaska's rural residents deserve access to clean, affordable, lower cost energy; these strategies are aimed to move the state in this direction.

PLANNING PROCESS HIGHLIGHTS

Task Force Meetings by the Numbers

73 *Total Number of Meetings*

158 *Total Hours of Meetings*

Rural Generation, Distribution, and Storage Subcommittee Meetings by the Numbers

10 *Total Number of Meetings*

13.5 *Total Hours of Meetings*

Note: Some Task Force Meetings include break-out subcommittee meetings.

STRATEGIES:

- C-1 Increase Capital Availability
- C-2 Infrastructure Investment
- C-3 Lower Operational Costs
- C-4 Improve Economies of Scale
- C-5 Improve Data-Driven Decision Making

STRATEGY C-1:
Increase Capital Availability

ACTIONS

C-1.1 Identify a funding or financing mechanism for rural communities including a "local match" for Federal grants.

C-1.2 Identify opportunities for Public Private Partnerships to finance/fund energy infrastructure projects in rural Alaska.

C-1.3 State of Alaska commit to sufficient capital budget funding for energy projects in rural Alaska, as identified by AEA, communities, or the Legislature.

Humpback Creek Intake, Cordova, Alaska

Purpose:
Increase access to capital to provide additional funding/finance for project and infrastructure construction.

Background:
Small communities and developing regions to not have the economy required to generate the capital needed to build energy projects – e.g. hydro, SMR, transmission infrastructure

Benefits:
Alaskans need to reduce the cost and increase access to reliable energy in rural Alaska.

Expected Results:
Sufficient investment in energy projects/infrastructure to reduce the cost of energy in rural Alaska.

STRATEGY C-2:
Infrastructure Investment

Wind Farm, Delta Junction, Alaska

Purpose:
Support existing infrastructure and add new infrastructure to provide Alaskans with reliable energy at reduced cost.

Background:
Replace aging and inefficient infrastructure to improve reliability and affordability. Invest in new infrastructure related to the production and transmittal of power to rural Alaska in conjunction with transportation and broadband infrastructure.

Benefits:
Make regionally connected infrastructure investments that improve reliability and affordability in rural Alaska.

Expected Results:
Investment in connected regional infrastructure for the community needs that lead to the most affordable and reliable energy which would in turn improve public health, welfare, and socio-economic conditions in rural Alaska.

ACTIONS

C-2.1 Promote a regional planning approach to connected energy, transportation, and broadband infrastructure.

C-2.2 Identify gaps by leveraging studies done by regional ANC corporations, Economic Development Districts, Denali Commission, and other organizations as well as state and federal agencies.

C-2.3 Replace or appropriately displace community-focused aging infrastructure in rural communities of Alaska.

C-2.4 Invest in pilot projects using appropriate technologies that demonstrate a regional approach to supplying affordable and reliable power to multiple communities.

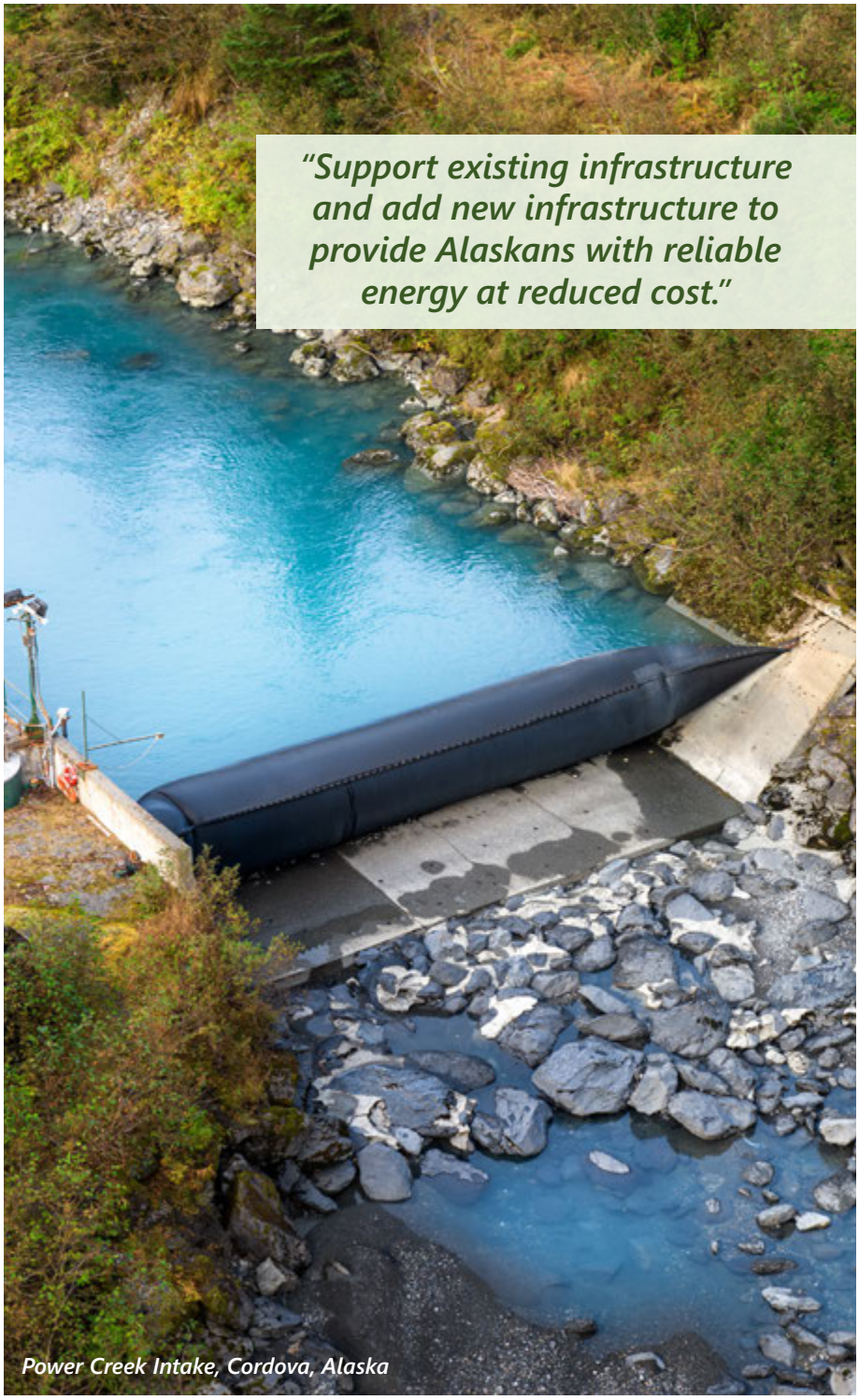
ACTIONS (CONT.)

C-2.5 Fund and construct opportunities to connect rural communities through transmission lines and other shared energy projects.

C-2.6 Invest in critical repairs and resilient infrastructure that may be at high risk to current and future natural hazards (wildfire, extreme cold, storms, etc.), to avoid energy disruptions and preserve continuity of operations.

C-2.7 Invest in expanding the Railbelt grid to rural areas.

C-2.8 Evaluate micronuclear, natural gas, hydrogen and other emerging/ underutilized technologies throughout the State of Alaska.



"Support existing infrastructure and add new infrastructure to provide Alaskans with reliable energy at reduced cost."

Power Creek Intake, Cordova, Alaska

STRATEGY C-3:
Lower Operational Costs


Bethel, Alaska

Purpose:
Lower operational costs of power/electricity, heating and transportation in rural Alaskan villages.

Background:
There is a need to lower operational costs to produce energy in rural Alaska. This can be done by increasing technical assistance in rural communities; lower maintenance costs; improve work force development opportunities for rural community residents; improve or develop transportation infrastructure beyond upgrading rural airports. Connecting rural communities to existing transmission/electric grids may be another option to lower operational costs.

Benefits and Expected Results:
Reduce the cost and increase access to reliable energy in rural Alaska.

ACTIONS

C-3.1 Expand and inventory technical assistance, training and workforce development to identify gaps, increase capability & capacity building activities for Training a Rural Energy Workforce. i.e. apprenticeship programs for energy production.

C-3.2 Identify innovation in logistics transportation to improve supply chain reliability.

C-3.3 Create and implement a community outreach and education program to encourage stakeholder adoption of energy projects in rural areas.

C-3.4 Procure, install, and improve grid modernization and automation.

STRATEGY C-4:
Improve Economies of Scale

ACTIONS

C-4.1 Identify economies of scope/scale to provide multi-benefit utility projects.

C-4.2 Identify energy anchor tenants to provide economy of scale for rural communities.

C-4.3 Identify funding and financing mechanisms for rural communities including a "local match" for Federal grants.

C-4.4 Identify and complete a regional pilot project to demonstrate economies of scale.

C-4.5 Develop and invest in rural beneficial electrification.

Utqiagvik, Alaska

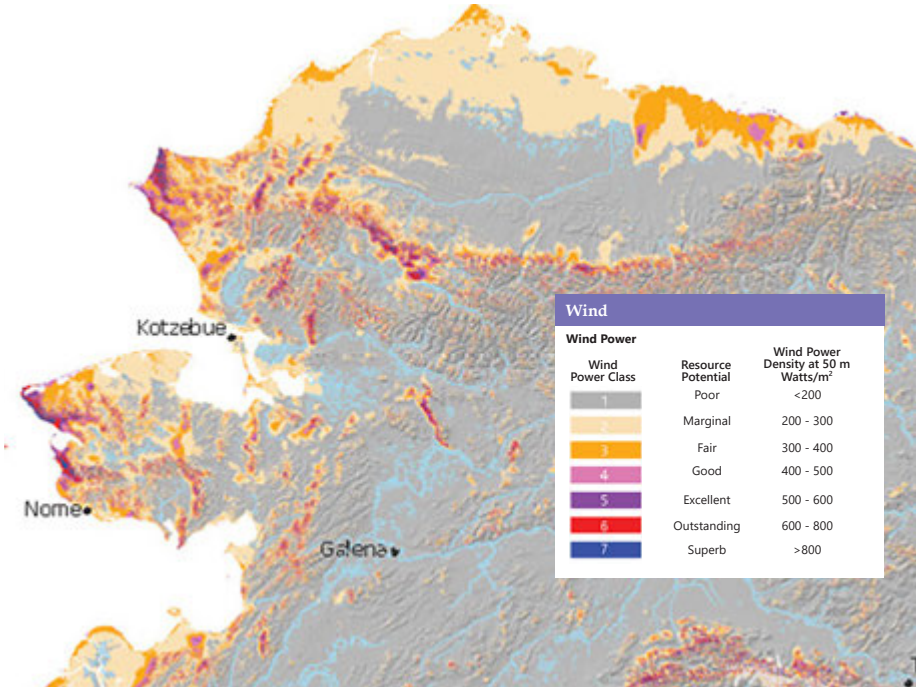
Purpose:
Reduce the cost of power and improve reliability.

Background:
By increasing the sale of power against fixed cost we can reduce the price per KWH.

Benefits:
Adequate access to reliable energy at lower cost to improve public health and welfare. Grow rural economies.

Expected Results:
Connect communities to each other and anchor tenants to improve the reliability and reduce the cost of energy which would in turn support public health and welfare and grow rural economies.

STRATEGY C-5:
Improve Data-Driven Decision Making



Renewable Energy Atlas of Alaska Map

Purpose:
Improve access to relevant data necessary to make informed value decisions related to energy generation, distribution, transmission and storage in rural Alaskan villages.

Background:
Legacy data collection processes have resulted in limited or incomplete data concerning Alaska's energy system, especially in rural Alaska. Current data analytic processes provide an opportunity to improve baseline data access, processing, and archiving. There is no overarching data custodian within the state that collects, manages, and archives data necessary to plan, design and construct energy infrastructure in rural Alaska. This includes critical local knowledge provided by village residents.

Benefits and Expected Results:
Provide better economic outcomes, long-term cost/benefit analysis for rural Alaskan communities related to energy infrastructure.

ACTIONS

C-5.1 Locate and catalog existing energy studies, and update and collect data necessary to make informed value decisions related to energy generation, distribution, transmission, and storage in rural Alaskan villages.

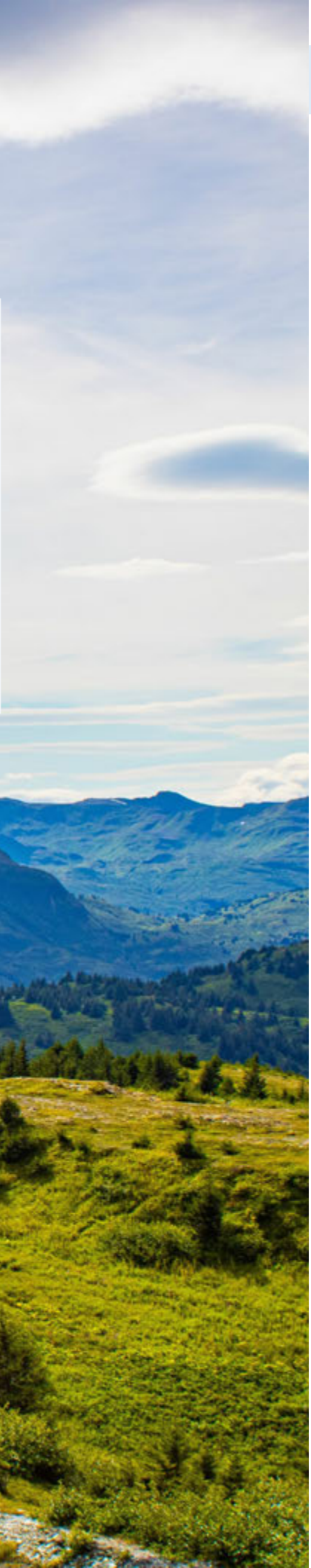
C-5.2 Leverage critical local knowledge provided by residents in coordination with and complementary to ongoing and planned projects

C-5.3 Explore and leverage existing and new data capture tools including artificial Intelligence to quickly analyze existing and new data collected in rural Alaska to provide potential energy solutions.

PRIORITY D.

STATE ENERGY DATA

Kodiak, Alaska



INTRODUCTION

There are literally terabytes of energy data available in the State of Alaska. Currently this data is not centrally located or managed. The Data Subcommittee created a Technical Advisory Committee to help them identify and clarify four strategies intended to help the state better collect, manage, and analyze energy data. Four strategies came from this effort. The first recommended establishing a data department within the Alaska Energy Authority to oversee management of Alaska's energy data. Second, establish an energy data governance committee that is responsible for establishing minimum protocols for data collection, quality, storage, use, and access for establishment of industry standard data governance protocols by that committee. The third strategy points to needed funding with the establishment of the above organizations, and the final strategy, improve existing statewide energy data and collect new, needed data with respect to electricity, heat, and transportation, focuses on validating and improving existing energy data, and collecting additional needed data to aid in future energy decision making.

PLANNING PROCESS HIGHLIGHTS

Task Force Meetings by the Numbers

73 *Total Number of Meetings*

158 *Total Hours of Meetings*

State Energy Data Subcommittee Meetings by the Numbers

5 *Total Number of Meetings*

20.5 *Total Hours of Meetings*

Note: Some Task Force Meetings include break-out subcommittee meetings.

STRATEGIES:

- D-1 Establish a Data Department within the Alaska Energy Authority (AEA), using statute as necessary
- D-2 Establish an energy data governance committee that is responsible for setting minimum protocols for data collection, quality, storage, use, and access
- D-3 Fund data capacity
- D-4 Improve existing statewide energy data and collect new, needed data with respect to electricity, heat, and transportation

STRATEGY D-1:
Establish a Data Department within the Alaska Energy Authority (AEA), using statute as necessary

ACTIONS

D-1.1 Institute or update statutory requirements for AEA Data Department.

D-1.2 Fund, develop, and implement a technical and needs assessment.

D-1.3 Fund, develop, and implement a capital asset plan.

D-1.4 Develop and fund an operating and maintenance budget, to include the identification of potential funding sources and mechanisms.

D-1.5 Appropriately staff the department based on the technical and needs assessment.

Alaska Intertie Mountains

Purpose:
To staff and properly equip a team dedicated to energy data management within the Alaska Energy Authority.

Background:
While a substantial amount of valuable energy data exists in aggregate, they are often inconsistent, inaccessible, and provided in formats which do not meet end-user needs. Existing data needs are thus being met by implementing unsustainable, short-term solutions such as adding additional responsibilities to existing staff, which often results in delays or needs going unmet.

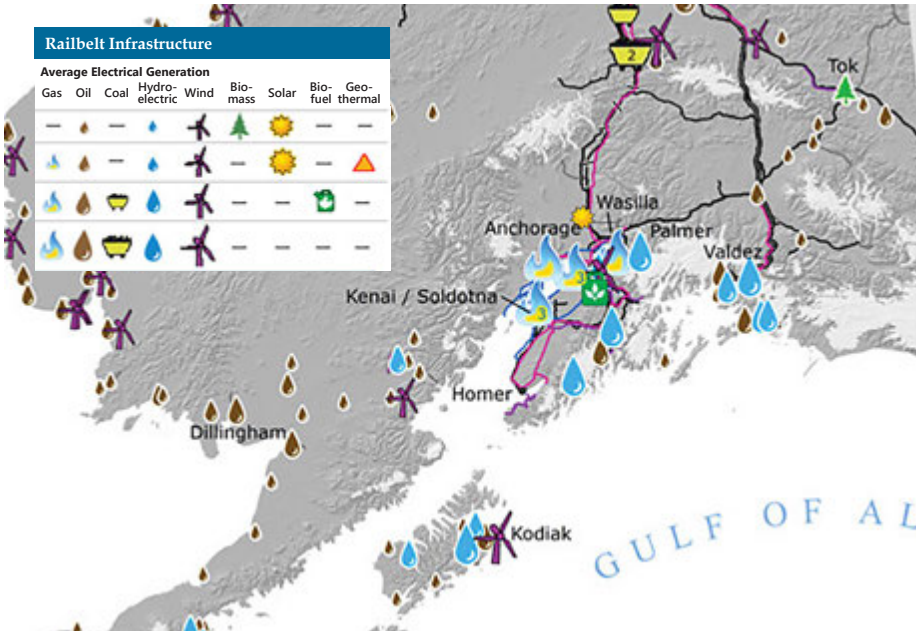
The Alaska Energy Authority is the state's energy office and lead agency for statewide energy policy and program development.

Benefits:
This recommendation prioritizes, centralizes, and focuses the importance of energy data management in order to ensure the consistency and accessibility of energy data so it can better inform decision-making efforts on energy projects, program and policy development. Housing a Data Department in AEA will ensure consistency and sustainability of state energy data management.

Expected Results:
The provision of consistent and accessible data further enabling data-informed decision-making on energy projects and policy across the state. Increased consistency of state data assets.

STRATEGY D-2:

Establish an energy data governance committee that is responsible for setting minimum protocols for data collection, quality, storage, use, and access



Renewable Energy Atlas of Alaska Map

Purpose:
Ensure that collection, quality, storage, use of, and access to electric, heat, and transportation energy data in Alaska meets industry standards, current protocols, and best practices.

Background:
Existing data can be inconsistent, inaccessible, and provided in formats which do not meet end-user needs. Security and accessibility of energy data are major concerns for public and private data users alike. The willingness to share, and the extent to which that data is shared, is significantly limited by concerns from such data providers regarding security, access, and usage.

Benefits:
Data-informed decision making is only as valid as the data on which the decision is based. The collection, quality, storage, use of, and access to energy data in Alaska should align with those industry best practices, standards, and current protocols so that all decisions are based on accurate and secure data.

Expected Results:
Energy data in Alaska meets and conforms with industry standards, protocols, and best practices. Increased participation of energy data stakeholders and end-users.

ACTIONS

D-2.1 Form a technical advisory committee to draft recommendations on where the data governance committee should be established, supported, staffed, membership composition, scope of duties responsibilities, and other issues that may need to be addressed.

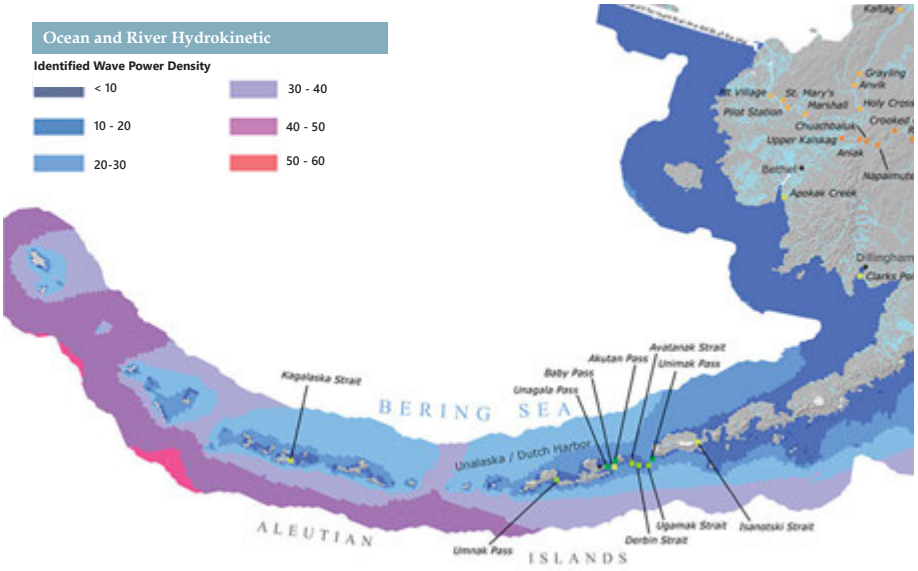
D-2.2 Fund a long-term data governance strategy based on recommendations made by the Technical Advisory Committee.

STRATEGY D-3:
Fund data capacity

ACTIONS

D-3.1 Establish dedicated data collection and analysis positions in state agencies that are responsible for collecting, analyzing, hosting, distributing data in formats that are accessible, and liaising with the AEA Data Department.

D-3.2 Provide professional development and/or skills training opportunities for staff and other agency partners as it relates to data collection and analysis.



Renewable Energy Atlas of Alaska Map

Purpose:
Establish dedicated data collection and analysis positions in state agencies that are responsible for collecting, analyzing, hosting, and distributing data in formats that are accessible, while liaising with the AEA Data Department.

Background:
Many of the ongoing data-related efforts across State agencies are borne by individuals whose duties and responsibilities are not primarily data-focused.

Benefits:
Establishing positions within State agencies whose primary duties and responsibilities are focused on data-related activities/initiatives, using statutes as necessary.

Expected Results:
Increased collaboration, reduced duplication of efforts, ease of data access, and better-informed decision making.

STRATEGY D-4:
Improve existing statewide energy data and collect new, needed data with respect to electricity, heat, and transportation

Wind Farm Construction, Toksook Bay, Alaska

Purpose:
Fund a gap analysis of energy data, including existing data, accessibility, quality, age, and what form and character of data is and would be needed for data-informed decision making.

Background:
Existing data can be inconsistent, inaccessible, and provided in formats which do not meet end-user needs. Thermal and transportation datasets are found to be lacking. The term "Energy Data" has historically been limited to electricity data, meaning there are significant gaps in thermal and transportation energy data.

Benefits:
Expand the definition of "Energy Data" and those existing, to-be-compiled, and to-be-created underlying datasets to include thermal and transportation data to better capture the dynamic and interrelated nature of energy use in Alaska.

Expected Results:
More all-encompassing and informed decision-making for energy projects and policies in Alaska, across electric, heat, and transportation sectors.

ACTIONS

D-4.1 Fund a gap analysis of energy data, including existing data, accessibility, quality, age, and what is and would be needed for data-informed decision making.

D-4.2 Revitalize, fund, and maintain energy data platforms and services so as to ensure the long-term availability and accessibility of data.

D-4.3 Conduct a data audit of the Regulatory Commission of Alaska (RCA) to include recommendations.

D-4.4 Expand the Power Cost Equalization (PCE) report and the extent of such data reported.

ACTIONS (CONT.)

D-4.5 Expand the definition of "energy data" by adopting the Technical Advisory Committee (TAC) definition, ensuring the definition is inclusive of heat/thermal and transportation fuel data.

D-4.6 Understand how heating and transportation fuel is delivered and used.

D-4.7 Re-establish annual updates to the Alaska Energy Statistics report.

PRIORITY E.

INCENTIVES AND SUBSIDIES

INTRODUCTION

The Incentives and Subsidies subcommittee settled on three themes and created five strategies to support securing affordable energy in Alaska. The first theme relates to strategies and actions that incentivize private sector investment. These strategies include decrease barriers to private sector investment, improve economies of project development, and respond to and implement evolving energy business models. The second theme is oriented to state and federal policy and law that could be modified to support and accelerate investment in energy generation, transmission, and storage in Alaska. These strategies include strengthen state-federal coordination and investment, evaluate and implement state policy, tax, and other incentives, and increase state programmatic investments. Finally, the Incentives and subsidies subcommittee acknowledges the need to continue existing subsidies offered by the state while some of the previous strategies are implemented. The final theme and strategy includes, Maintaining Residential subsidy focused on equity, while reducing the need across communities.

PLANNING PROCESS HIGHLIGHTS

Task Force Meetings by the Numbers

73 *Total Number of Meetings*

158 *Total Hours of Meetings*

Incentives and Subsidies Subcommittee Meetings by the Numbers

15 *Total Number of Meetings*

18 *Total Hours of Meetings*

Note: Some Task Force Meetings include break-out subcommittee meetings.

STRATEGIES:

- E-1 Strengthen state-federal coordination and investment
- E-2 Reduce the barriers to private sector investments
- E-3 Maintain residential subsidy focused on equity, while reducing need across communities
- E-4 Improve the economics of project development
- E-5 Increase State programmatic investments

STRATEGY E-1:
Strengthen state-federal coordination and investment

ACTIONS

E-1.1 Establish a state/federal working group that identifies and works toward 1) improved access on federal lands, 2) establishes funding to accelerate a local, reliable, and affordable energy transition, 3) and enables leveraging investment opportunities between state and federal programs.

Chugach Mountains

Purpose:
The Task Force recommends the establishment of a state/federal working group that identifies and works toward improved access on federal lands, establishes funding in place to accelerate a local, reliable, and affordable energy transition, and the ability to leverage investment opportunities between state and federal programs.

Background:
The State of Alaska has the highest disparity of power costs from one community or region to another. Some of Alaska's highest-cost energy communities have significant barriers in the form of federal lands, which comprise more than 60% of the state. Additionally, Alaska has comparatively underdeveloped transmission lines compared to other States and territories, and this deficiency negatively impacts renewable energy development required to reduce energy costs. Federal land use policy comes with significant hurdles and a limited ability to effect widespread access or change.

Benefits and Expected Results:
A coordinated and targeted effort by state and federal agencies that focuses on improving access and removing barriers is critical to reduce the cost of energy in Alaska, even as it increases the potential to meet federal clean energy goals.

The increased capacity of the state to negotiate and execute priorities with willing federal agencies for developing cost-effective clean energy, transmission lines on federal lands, with dedicated funding in place to bring Alaska parity with the rest of the nation, will reduce energy costs for Alaskans while assisting federal agencies in meeting national clean energy goals. This process will increase knowledge of available funding and implementation support for energy projects in Alaska. This action aligns with and should leverage current federal investment through IIJA and IRA.

STRATEGY E-2:
Reduce the barriers to private sector investments


Homer, Alaska

ACTIONS

E-2.1 Establish a strategic approach to policy, tax, and program development that stimulates and incentivizes private sector activity that leads to reduced cost, locally sourced, and reliable energy.

Purpose:
The Task Force recommends a strategic approach to policy, tax, and program development that stimulates and incentivizes private sector activity leads to reduced cost, locally sourced, and reliable energy.

Background:
Federal and state investment is insufficient to address the scale necessary to effect widespread and meaningful transition toward reduced cost and reduced carbon energy. At the same time, removing barriers or relieving the burdens associated with private sector investments has the potential to increase Alaska's ability to establish partnerships, and leverage private capital in the public interest. Ultimately, what the State has most control of is its own policy, regulatory, and tax systems. The State's capacity to contribute to reducing the cost of energy for Alaskans is immense, and intensity of effort is required to fully assess current activity and the potential need for new laws and practices that will incentivize change.

Benefits and Expected Results:
Initiating a series of statutory changes and encouraging quicker adoption by communities and use by utilities and others will unlock private sector investment. Offsetting upfront costs and increasing the utilization of low-interest public capital will strengthen project economics while including strong public benefit criteria. Finally, this process envisions increasing the overall economy of scale, which will contribute to reducing barriers.

STRATEGY E-3:
Maintain residential subsidy focused on equity, while reducing need across communities

ACTIONS

E-3.1 Continue the commitment by the State to ensure residents have access to Power Cost Equalization (PCE) funds for as long as lower costs are not achieved, as the State actively works to 1) consider alternative mechanisms, 2) strategically deploy PCE funds to advance low-cost energy solutions, and 3) identify opportunities to expand the ability of PCE to reduce costs across sectors within communities.

Fairbanks, Alaska

Purpose:
The Task Force recommends the continued commitment by the State to ensure residents have access to subsidy where and for as long as lower costs are not achieved, as the State actively works to 1) consider alternative mechanisms, 2) strategically deploy PCE funds to advance low-cost energy solutions, and 3) identify opportunities to expand the ability of PCE to reduce costs across sectors within communities.

Background:
The value of PCE cannot be overstated – it has proven to be a lifeline to Alaskans who bear the brunt of high costs. This equitable distribution of State funding, relative to and based on project investment in some parts of the state, has lowered costs in communities where otherwise more residents may have chosen outmigration. Reducing the need for this subsidy by reducing costs in communities should remain a long-term goal of the State.

Benefits and Expected Results:
Working toward a flatter rate across Alaska improves the mobility of residents, increases economic opportunity, and improves quality of life for Alaskans.

STRATEGY E-4:
Improve the economics of project development


AEA Training, Nikolai, Alaska

ACTIONS

E-4.1 Create a multi-pronged approach to reduce risk to utilities and project proponents, increase the availability of financing mechanisms, and encourage ancillary investments that will benefit the industry and economies of communities.

Purpose:
The Task Force recommends a multi-pronged approach to reducing risk to utilities and project proponents, increasing the availability of financing mechanisms, and encouraging ancillary investments that will benefit the industry and economies of communities.

Background:
Alaska will always be a high-cost state, defined by the tyranny of geography, time, and distance. Access to markets, and at the tail-end of a global supply chain, there are clear competitive disadvantages within which utilities and project developers operate, even as ratepayers (or the State) bear the cost. There are ways, however, to lower the costs of project development, and state action can facilitate this.

Benefits and Expected Results:
Affordability rests on CAPEX and OPEX, and both have avoidable and unavoidable layered costs. A strategic state approach can begin peeling away or mitigating avoidable costs to improve the economics of project development, and ultimately save ratepayers money.

STRATEGY E-5:
Increase State programmatic investments

ACTIONS

E-5.1 Evaluate and change current programmatic investments such that 1) these programs have sufficient capacity and competency to act effectively in support of lowering energy costs in Alaska, and 2) that the braiding of programmatic intent results in streamlining action and reducing CAPEX and OPEX costs.

Denali Range

Purpose:
The Task Force recommends the evaluation of and changes to current programmatic investments such that 1) these programs have sufficient capacity and competency to act effectively in support of lowering energy costs in Alaska, and 2) that the braiding of programmatic intent results in streamlining action and reducing capex and opex costs.

Background:
Government programs may be developed to provide technical assistance or to serve as a resource to consumers, project proponents, and others. Program staff provide support and guidance as to how to utilize these tools. Programs may also try to provide direct services, such as improving energy efficiency, weatherization, community planning, or rate review and setting. Some programs are simply there to ensure compliance. Governments may spend significant resources on these programs. It is not clear that programs reduce the cost of energy, though they may have other benefits.

Benefits and Expected Results:
The ability of the state to achieve a moonshot goal requires a coordinated effort across agencies and through all programs that intersect with the goal. The state can consider every program through the lens of lowering energy costs for Alaskans, and refine its approaches to achieve that end.

Denali Village, Alaska

PRIORITY F.

STATUTES AND REGULATIONS

STRATEGIES:

F-1 Improve Electrical Transmission System

F-2 Encourage Energy and Generation Diversification

F-3 Utility Regulation

F-4 Executive and Organizational Changes

INTRODUCTION

Described below is the method that the Statutes and Regulations Subcommittee ("SRS") used to present its findings and recommendations in support of the overall objectives of the Task Force.

First, the SRS compiled a comprehensive Statutes and Regulations Matrix included herein as Table F-1 ("Matrix"). This Matrix is a summary of each of the action items from the other five Task Force subcommittees that recommend changes in government policy. While not attempting to duplicate the detailed discussion on each item presented in the subcommittee sections, the Matrix provides the reader with a consolidated and comprehensive presentation of actionable statute, regulation, appropriation, and government policy recommendations from the entire Task Force.

Second, the SRS then considered input received by the Task Force, as well as discussions within the Task Force and developed a number of action items in furtherance of Task Force goals that had not been addressed by the other subcommittees. These SRS action items are reflected in papers F-1.1 to F-4.1 included herein.

These SRS action items were then grouped into four general strategies (1) Improve Transmission, (2) Diversify Energy and Generation, (3) Utility Regulation, and (4) Executive and Organizational Changes. Where these align with similar strategies from other subcommittees, key statute or policy recommendations from the other subcommittees were included together in a bulleted list with the SRS action items in order to provide a compilation of all key actions needed to fully implement the strategy. When an action item arose from the SRS, it is referenced with an F-x.x number. When an action item arose from another committee, the reference Action Y-x.x from the Matrix is noted.

PLANNING PROCESS HIGHLIGHTS

Task Force Meetings by the Numbers

73 *Total Number of Meetings*

158 *Total Hours of Meetings*

Statutes and Regulations Subcommittee Meetings by the Numbers

11 *Total Number of Meetings*

12 *Total Hours of Meetings*

Note: Some Task Force Meetings include break-out subcommittee meetings.

STRATEGY F-1:
Improve Electrical Transmission System

ACTIONS

F-1.1 Identify state matching funds necessary for all federal funds available for transmission infrastructure (also see Matrix B-2.4).

F-1.2 Clarify state statute AS 09.65.86 on Utility ROW wildfire liability.

F-1.3 Review 17 AAC 15.131. Utility accommodation on controlled-access highways in order to continue to allow transmission and distribution lines to share DOT right-of-way.

F-1.4 Establish a State/ Municipal, Federal, ANCSA corps and tribes planning effort to focus on future transmission and distribution siting and ROW's to facilitate efficient buildout of Alaska's transmission infrastructure (also see Matrix B-3.2).

Hoonah, Alaska

Purpose:
Identify changes in statutes, regulations, or appropriations that are needed to implement Task Force recommendations regarding planning, investment, construction and operation of improved electrical transmission in Alaska.

Background:
Originally, all electrical generation in Alaska occurred within local islanded systems, whether in coastal, rural, or railbelt regions. As Alaska has grown, there is a dire need to improve reliability and efficiency of transmitting power between communities. The benefits would be:

- Reduces transmission constraints while also allowing new generation technologies and locations to compete.
- Provides system redundancy, resilience, and increases reliability.
- Benefits utilities and ratepayers by sharing power across regions or communities.
- Reduces costs for consumers and promotes job creation.
- Coordinates planning, financing, and construction of new infrastructure.

Benefits and Expected Results:
This strategy will result in a more resilient and reliable transmission and electric grid system that will lower rates, help bring clean energy online, reduce costs for consumers, and promote job creation.

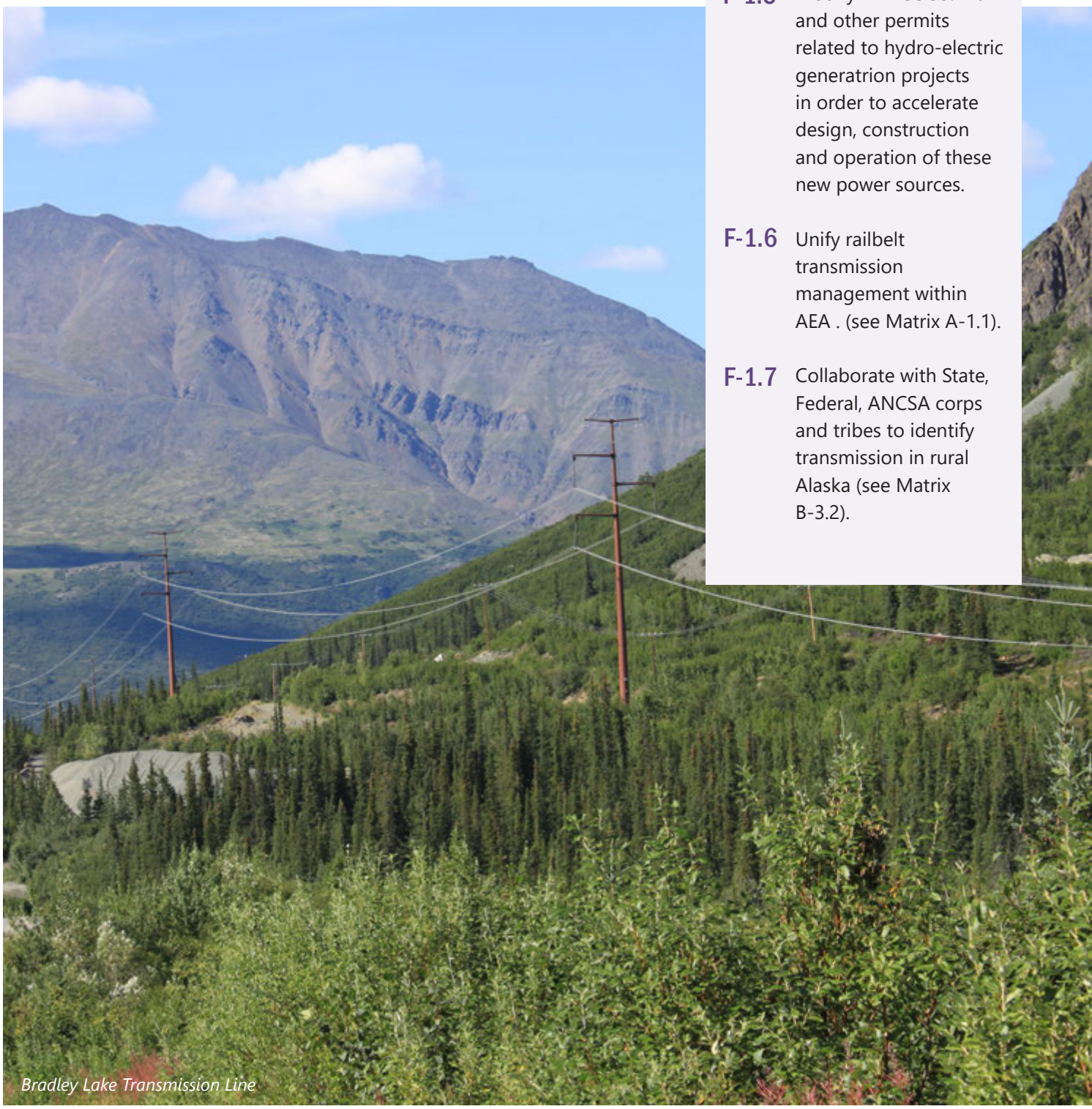
ACTIONS

F-1.5 Modify 11 ACC 93.120 and other permits related to hydro-electric generatrion projects in order to accelerate design, construction and operation of these new power sources.

F-1.6 Unify railbelt transmission management within AEA . (see Matrix A-1.1).

F-1.7 Collaborate with State, Federal, ANCSA corps and tribes to identify transmission in rural Alaska (see Matrix B-3.2).

ACTIONS CONTINUED FOR STRATEGY F-1



Bradley Lake Transmission Line

STRATEGY F-2:
Encourage Energy and Generation Diversification

ACTIONS

F-2.1 Appropriate or identify state funds to provide the local match required to obtain federal grants for electrical generation projects when a cost/benefit analysis shows a positive benefit to the state or the communities the project is intended for (See Matrix C-1.1).

F-2.2 Maximize future optionality for use of Alaska sourced fossil fuels by monitoring and evaluating third party development of carbon capture and sequestration technologies and passing legislation establishing a regulatory framework for the geologic storage of carbon.

King Salmon, Alaska

Purpose:
Identify changes in statutes, regulations, or appropriations that are needed to implement Task Force recommendations to encourage energy and generation diversification.

Background:
For many years, for both space heat and electricity, the railbelt has relied primarily on Cook Inlet natural gas, rural Alaska has relied primarily upon diesel fuel, and coastal Alaska has primarily used a combination of hydropower and diesel fuel.

Energy source and generation diversification within each of these regions will allow various technologies to compete to bring the most affordable, reliable, and local energy to Alaskans.

Benefits and Expected Results:
Greater diversification of power generation to provide reliable, lower cost electricity, heat, and transportation for rate payers.

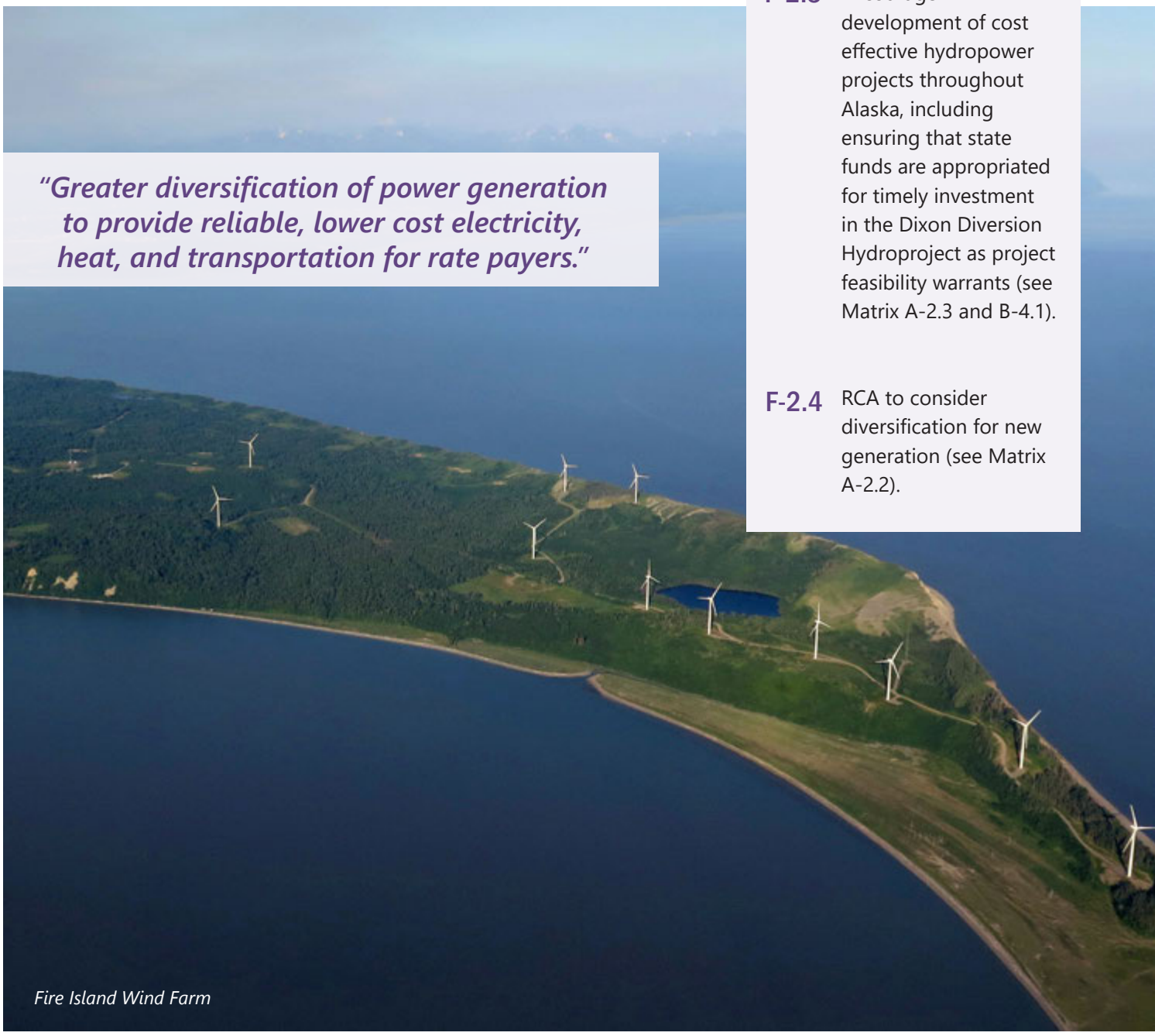
ACTIONS CONTINUED FOR STRATEGY F-2

"Greater diversification of power generation to provide reliable, lower cost electricity, heat, and transportation for rate payers."

ACTIONS

F-2.3 Encourage development of cost effective hydropower projects throughout Alaska, including ensuring that state funds are appropriated for timely investment in the Dixon Diversion Hydroproject as project feasibility warrants (see Matrix A-2.3 and B-4.1).

F-2.4 RCA to consider diversification for new generation (see Matrix A-2.2).



Fire Island Wind Farm

STRATEGY F-3:
Utility Regulation

ACTIONS

F-3.1 Provide support for the Regulatory Commission of Alaska (RCA) sufficient to improve the RCA's ability to respond timely and appropriately to the complex energy production, generation, and transmission challenges in Alaska.

F-3.2 As Alaska works toward achieving a goal of $.10 cents per kw/hr the Task Force recommends maintaining and expanding the PCE Program until all Alaskans benefit from actual equitable and lower cost energy.

F-3.3 Modify 3AAC 46.270 (f) to reduce the ambiguity surrounding avoided cost standards. Modify (AS 42.05.760-.785) to ensure alignment with unified Railbelt transmission authority (see Matrix A-1.1).


Sitka, Alaska

Purpose:
Identify changes in statutes, regulations, or appropriations that are needed to implement Task Force recommendations related to utility regulation.

Background:
Federal, state, and local governments play a key role in development and transport of oil and gas and regulation of generation and transmission of electricity.

Benefits and Expected Results:
Budgetary support or modification of statutes and regulations that govern Alaska's utilities, energy generation, distribution, transmission and storage is recommended in order to support lower energy costs for all Alaskans.

Improved utility regulation and a more efficient RCA will support a more dynamic environment for utilities to be able to respond to system challenges in a more timely and cost effective manner.

Humpback Creek Plant, Cordova, Alaska

ACTIONS (CONT.)

F-3.4 Adopt a Clean Energy Standard with incentives (See Matrix A-2.1).

F-3.5 Provide incentivized power tariff rate to attract new industry to Alaska.

STRATEGY F-4:
Executive and Organizational Changes

ACTIONS

F-4.1 Create a data department with the Alaska Energy Authority (AEA), using statute as necessary (see Matrix D-1.1).

Purpose:
Staff and properly equip a team dedicated to energy data management within the Alaska Energy Authority.

Background:
While a substantial amount of valuable energy data exists in aggregate, this data is often inconsistent, inaccessible, and provided in formats which do not meet end-user needs. Existing data needs are thus being met by implementing unsustainable, short-term solutions such as adding additional responsibilities to existing staff, which often results in delays or needs going unmet.

The Alaska Energy Authority is the state's energy office and lead agency for statewide energy policy and program development.

Benefits and Expected Results:
This recommendation prioritizes, centralizes, and focuses the importance of energy data management in order to ensure the consistency and accessibility of energy data so it can better inform decision-making efforts on energy projects, program, and policy development. Housing a Data Department in AEA will ensure consistency and sustainability of state energy data management.

Chugach Mountains, Alaska

Table F-1: Comprehensive Statutes and Regulations Matrix

The table below notes where similar strategies align across subcommittees, key statute or policy recommendations.

Action #	Action Description	Priority A. Railbelt Transmission, Generation, and Storage	Priority B. Coastal Generation, Distribution, and Storage
Action A-1.1	Unify all existing transmission assets along the Railbelt and Bradley Lake under Alaska Energy Authority or a new not-for-profit regulated utility.		
Action A-2.1	Adopt Clean Energy Standard and incentives to diversify generation		
Action A-2.2	Modify existing statute(s) requiring the Regulatory Commission of Alaska to consider long term diversification goals when approving additional/new Railbelt power generation.		
Action A-2.3.1	Progress known near term energy diversification projects to a go/no-go decision: Dixon Diversion		
Action A-2.4.1	Progress Known Energy Generation Diversification Projects to Go/No-Go Decision. Long Term: Susitna-Watana		
Action A-2.4.2	Progress known long term energy diversification projects to a go/no-do decision: AKLNG, Bullet Line & Alternatives		
Action A-3.1.1	Significantly increase load to drive down energy rates: RFP for Industrial Customers		B-1.4
Action A-3.1.2	Significantly increase load to drive down energy rates: Energy tax credit for new industrial customers		B-1.4

Action # (cont.)	Priority C. Rural Generation, Distribution, and Storage	Priority D. State Energy Data	Priority E. Incentives and Subsidies	Priority F. Statues and Regulations
Action A-1.1			E-2.2	
Action A-2.1			E-1.3 E-2.3 E-4.4	F-3.6
Action A-2.2			E-2.4	F-2.4 F-3.5
Action A-2.3.1				F-2.3
Action A-2.4.1				
Action A-2.4.2				
Action A-3.1.1	C-4.2		E-2.6 E-4.5 E-5.4	F-3.7
Action A-3.1.2	C-4.2		E-2.6 E-4.5 E-5.4	F-3.7

Table F-1: Comprehensive Statutes and Regulations Matrix

The table below notes where similar strategies align across subcommittees, key statute or policy recommendations.

Action #	Action Description	Priority A. Railbelt Transmission, Generation, and Storage	Priority B. Coastal Generation, Distribution, and Storage
Action A-3.1.3	Significantly increase load to drive down energy rates: Identify "load-friendly" areas already in-place		B-1.4
Action B-1.1	Integrate and Promote Heat Pump technology and systems (ASHP, SWHP, GSHP) as an Alternative Energy Resource in Coastal Alaska.		
Action B-1.2	Plan, finance, and support the execution of Shore power at Public and Private Cruise Docks to Sell Excess Energy to Cruise Ships.		
Action B-1.3	Beneficially electrify the Alaska Ferry Fleet to lower cost of transportation, emissions, and assist in reducing the cost of power in coastal communities.		
Action B-1.4	Identify and support the colocation of industrial loads (e.g., data servers) with Alaska Hydropower facilities for synergies to lower energy costs.		
Action B-1.5	Identify, assist, and fund Battery Energy Storage Systems (BESS) and other Energy Storage Systems (ESS) for successful integration into Coastal communities to increase energy security, increase grid resilience, and to lower energy costs.		
Action B-2.1	Establish, require, assist, and Implement community Integrated Resource Plans (light) to forecast energy demand and generation for community and regional future energy needs and to lower energy costs.		
Action B-2.2	Strengthen and streamline the State of Alaska's internal state regulatory and land use administrative processes to accelerate approval to advance strategic energy projects and transmission for regional energy security and lower energy costs.		

Action # (cont.)	Priority C. Rural Generation, Distribution, and Storage	Priority D. State Energy Data	Priority E. Incentives and Subsidies	Priority F. Statues and Regulations
Action A-3.1.3	C-4.2		E-2.6 E-4.5 E-5.4	F-3.7
Action B-1.1				
Action B-1.2				
Action B-1.3				
Action B-1.4				
Action B-1.5				
Action B-2.1	C-2.1		E-2.6	F-1.4
Action B-2.2				

Table F-1: Comprehensive Statutes and Regulations Matrix

The table below notes where similar strategies align across subcommittees, key statute or policy recommendations.

Action #	Action Description	Priority A. Railbelt Transmission, Generation, and Storage	Priority B. Coastal Generation, Distribution, and Storage
Action B-2.3	Strengthen and Streamline the State of Alaska's internal state regulatory and land use administrative processes to accelerate approval to advance strategic energy projects and transmission for regional energy security and lower energy costs.	A-2.3	
Action B-2.4	Strategize and prioritize State of Alaska funding to match federal funding and federal financing to build and expand transmission and distribution lines in Alaska to bring Alaska on par with the US transmission systems for Alaskan energy security and lower energy costs.		
Action B-2.5	Establish and provide valuable energy planning and modeling metrics from State data sources, where available and requested (such as DMV electric vehicle registrations and Air Source Heat Pump (ASHP) installation) by individual communities.		
Action B-2.6	Recruit, train, and enhance Alaska workforce with technical skills and training for advancing beneficial electrification to lower Alaska energy costs and to sustain Alaska's growing energy infrastructure.		
Action B-3.1	Establish an Alaska/ federal Renewable Energy Policy Force to develop, collaborate, and prioritize State energy, plan, goals, and rights to optimally advance renewable energy and transmission on federal lands.		
Action B-3.2	State of Alaska partners and collaborates with Federally recognized Alaska tribes and federal agencies to develop mutually beneficial Energy Development and Transmission/ Distribution to advance the State Energy Plan to lower the cost of energy.		
Action B-4.1	Foster, support, and assist Hydropower development and their transmission in Alaska to lower energy costs, provide energy security, and spur economic growth, job creation, and prosperity for Alaska.	A-2.3	
Action C-1.1	Identify a funding or financing mechanism for rural communities including a "local match" for federal grants.		B-2.4

Action # (cont.)	Priority C. Rural Generation, Distribution, and Storage	Priority D. State Energy Data	Priority E. Incentives and Subsidies	Priority F. Statues and Regulations
Action B-2.3			E-1.2	F-1.5
Action B-2.4	C-1.1		E-1.1	F-1.1
Action B-2.5	C-5.1	D-4.2		
Action B-2.6	C-3.1		E-5.2 E-5.4	
Action B-3.1	C-3.1		E-1.2 E-1.5	
Action B-3.2	C-4.5		E-1.5	F-1.8
Action B-4.1				F-1.6 F-2.3
Action C-1.1			E-1.1	F-1.1 F-2.1

Table F-1: Comprehensive Statutes and Regulations Matrix

The table below notes where similar strategies align across subcommittees, key statute or policy recommendations.

Action #	Action Description	Priority A. Railbelt Transmission, Generation, and Storage	Priority B. Coastal Generation, Distribution, and Storage
Action C-1.2	Identify opportunities for Public Private Partnerships to finance/fund energy infrastructure projects in rural Alaska.		
Action C-1.3	State of Alaska commit to sufficient capital budget funding for energy projects in rural Alaska, as identified by AEA, communities, or the Legislature.		
Action C-2.1	Promote a regional planning approach to connected energy, transportation, and broadband infrastructure.		B-2.1
Action C-2.2	Identify gaps by leveraging studies done by regional ANC corporations, Economic Development Districts, Denali Commission, and other organizations as well as state and federal agencies.		
Action C-2.3	Replace or appropriately displace community-focused aging infrastructure in rural communities of Alaska.		
Action C-2.4	Invest in pilot projects using appropriate technologies that demonstrate a regional approach to supplying affordable and reliable power to multiple communities.		
Action C-2.5	Fund and construct opportunities to connect rural communities through transmission lines and other shared energy projects.		
Action C-2.6	Invest in critical repairs and resilient infrastructure that may be at high risk to current and future natural hazards (wildfire, extreme cold, storms, etc.), to avoid energy disruptions and preserve continuity of operations.		

Action # (cont.)	Priority C. Rural Generation, Distribution, and Storage	Priority D. State Energy Data	Priority E. Incentives and Subsidies	Priority F. Statues and Regulations
Action C-1.2			E-4.6	
Action C-1.3				
Action C-2.1			E-2.6	F-1.4
Action C-2.2		D-4.1		
Action C-2.3			E-5.2	
Action C-2.4				
Action C-2.5			E-1.3	F-1.8
Action C-2.6			E-5.3	

Table F-1: Comprehensive Statutes and Regulations Matrix

The table below notes where similar strategies align across subcommittees, key statute or policy recommendations.

Action #	Action Description	Priority A. Railbelt Transmission, Generation, and Storage	Priority B. Coastal Generation, Distribution, and Storage
Action C-2.7	Invest in expanding the grid in rural areas.		
Action C-2.8	Evaluate micronuclear, natural gas, hydrogen and other emerging/underutilized technologies throughout the State of Alaska.		B-2.6
Action C-3.1	Expand and Inventory technical assistance, training, and workforce development to identify gaps, and increase capability & capacity-building activities for Training a Rural Energy Workforce. i.e. apprenticeship programs for energy production.		
Action C-3.2	Identify innovation in logistics transportation to improve supply chain reliability.		
Action C-3.3	Create and implement a community outreach and education program to encourage stakeholder adoption of energy projects in rural areas.		
Action C-3.4	Procure, install, and improve grid modernization and automation.		
Action C-4.1	Identify economies of scope/scale to provide multi-benefit utility projects.		
Action C-4.2	Identify energy anchor tenants to provide economy of scale for rural communities.		

Action # (cont.)	Priority C. Rural Generation, Distribution, and Storage	Priority D. State Energy Data	Priority E. Incentives and Subsidies	Priority F. Statues and Regulations
Action C-2.7				
Action C-2.8			E-5.2 E-5.4	
Action C-3.1				
Action C-3.2				
Action C-3.3				
Action C-3.4				
Action C-4.1				
Action C-4.2			E-5	

Table F-1: Comprehensive Statutes and Regulations Matrix

The table below notes where similar strategies align across subcommittees, key statute or policy recommendations.

Action #	Action Description	Priority A. Railbelt Transmission, Generation, and Storage	Priority B. Coastal Generation, Distribution, and Storage
Action C-4.3	Identify funding and financing mechanisms for rural communities including a "local match" for Federal grants.		
Action C-4.4	Identify and complete a regional pilot project to demonstrate economies of scale.		
Action C-4.5	Develop and invest in rural beneficial electrification.		
Action C-5.1	Locate and catalog existing energy studies, and update and collect data necessary to make informed value decisions related to energy generation, distribution, transmission, and storage in rural Alaskan villages.		
Action C-5.2	Leverage critical local knowledge provided by residents in coordination with and complement ongoing and planned projects.		
Action C-5.3	Explore and leverage existing and new data capture tools including artificial Intelligence tools to quickly analyze existing and new data collect-ed in rural Alaska to provide potential energy solutions.		
Action D-1.1	Institute or update statutory requirements for AEA Data Department.		
Action D-1.2	Fund, develop, and implement a technical and needs assessment.		

Action # (cont.)	Priority C. Rural Generation, Distribution, and Storage	Priority D. State Energy Data	Priority E. Incentives and Subsidies	Priority F. Statues and Regulations
Action C-4.3				
Action C-4.4				
Action C-4.5				
Action C-5.1		D-4.1		
Action C-5.2				
Action C-5.3		D-4.1		
Action D-1.1				F-4.1
Action D-1.2				F-4.1

Table F-1: Comprehensive Statutes and Regulations Matrix

The table below notes where similar strategies align across subcommittees, key statute or policy recommendations.

Action #	Action Description	Priority A. Railbelt Transmission, Generation, and Storage	Priority B. Coastal Generation, Distribution, and Storage
Action D-1.3	Fund, develop, and implement a capital asset plan.		
Action D-1.4	Develop and fund an operating and maintenance budget, to include the identification of potential funding sources and mechanisms.		
Action D-1.5	Appropriately staff the department based on the technical and needs assessment.		
Action D-2.1	Form a technical advisory committee to draft recommendations on where the data governance committee should be established, supported, staffed, membership composition, scope of duties responsibilities, and other issues that may need to be addressed.		
Action D-2.2	Fund a long-term data governance strategy based on recommendations made by the Technical Advisory Committee.		
Action D-3.1	Establish dedicated data collection and analysis positions in state agencies that are responsible for collecting, analyzing, hosting, distributing data in formats that are accessible, and liaising with the AEA Data Department.		
Action D-3.2	Provide professional development and/or skills training opportunities for staff and other agency partners as it relates to data collection and analysis.		
Action D-4.1	Fund a gap analysis of energy data, including existing data, accessibility, quality, age, and what is and would be needed for data-informed decision making.		B-2.5

Action # (cont.)	Priority C. Rural Generation, Distribution, and Storage	Priority D. State Energy Data	Priority E. Incentives and Subsidies	Priority F. Statues and Regulations
Action D-1.3				F-4.1
Action D-1.4				F-4.1
Action D-1.5				F-4.1
Action D-2.1				F-4.1
Action D-2.2				F-4.1
Action D-3.1				F-4.1
Action D-3.2				F-4.1
Action D-4.1	C-5.1 C-5.2			F-4.1

Table F-1: Comprehensive Statutes and Regulations Matrix

The table below notes where similar strategies align across subcommittees, key statute or policy recommendations.

Action #	Action Description	Priority A. Railbelt Transmission, Generation, and Storage	Priority B. Coastal Generation, Distribution, and Storage
Action D-4.2	Revitalize, fund, and maintain energy data platforms and services so as to ensure the long-term availability and accessibility of data.		
Action D-4.3	Conduct a data audit of the Regulatory Commission of Alaska (RCA) to include recommendations.		
Action D-4.4	Expand the Power Cost Equalization (PCE) report and the extent of such data reported.		
Action E-1.1	Establish a state/federal working group that identifies and works toward 1) improved access on federal lands, 2) funding to accelerate a local, reliable, and affordable energy transition, 3) the ability to leverage investment opportunities between state and federal programs		
Action E-2.1	Establish a strategic approach to policy, tax, and program development that stimulates and incentivizes private sector activity that leads to lower cost, local, and reliable energy.	A-2.2 A-3.1	
Action E-3.1	Continue the commitment by the State to ensure residents have access to Power Cost Equalization (PCE) funds for as long as lower costs are not achieved, even as the State actively works to 1) consider alternative mechanisms, 2) strategically deploys PCE funds to advance low-cost energy solutions, and 3) expands the ability of PCE to lower costs across sectors within communities.	A-1.1	
Action E-4.1	Create a multi-pronged approach to reduce risk to utilities and project proponents, increase the availability of financing mechanisms, and encourage ancillary investments that will benefit the industry and economies of communities.		
Action E-5.1	Evaluate and change current programmatic investments such that 1) these programs have sufficient capacity and competency to act effectively in support of lowering energy costs in Alaska, and 2) that the braiding of programmatic intent results in streamlining action and reducing CAPEX and OPEX costs.		

Action # (cont.)	Priority C. Rural Generation, Distribution, and Storage	Priority D. State Energy Data	Priority E. Incentives and Subsidies	Priority F. Statues and Regulations
Action D-4.2				F-4.1
Action D-4.3				
Action D-4.4				
Action E-1.1				F-1.5
Action E-2.1				F-3.6
Action E-3.1				F-3.2
Action E-4.1				
Action E-5.1	C-2.6			

Table F-1: Comprehensive Statutes and Regulations Matrix

The table below notes where similar strategies align across subcommittees, key statute or policy recommendations.

Action #	Action Description	Priority A. Railbelt Transmission, Generation, and Storage	Priority B. Coastal Generation, Distribution, and Storage
Action F-1.1	Identify state matching funds for all federal funds available for transmission infrastructure (See Action B-2.4)		B-2.4
Action F-1.2	Clarify state statute AS 09.65.86 on Utility ROW wildfire liability.		
Action F-1.3	Review 17 AAC 15.131. Utility accommodation on controlled-access highways in order to continue to allow transmission and distribution lines to share DOT right-of-way.		
Action F-1.4	Establish a State/Municipal Federal, ANCSA corps and tribes planning effort to focus on future transmission and distribution siting and ROW's to facilitate efficient buildout of Alaska's transmission infrastructure.		
Action F-1.5	Establish renewable energy or transmission line land designations and ROW's.		
Action F-1.6	Modify 11 ACC 93.120 and other permits related to hydro-electric generation projects in order to accelerate design, construction and operation to these new power sources. (See Action B-4.1).		B-4.1
Action F-2.1	Appropriate or identify state funds to provide the local match required to obtain federal grants for electrical generation projects when a cost/benefit analysis shows a positive benefit to the state or the communities the project is intended for. (See Action C-1.1).		B-2.4
Action F-2.2	Maximize future optionality for use of Alaska sourced fossil fuels by monitoring and evaluating third party development of carbon capture and sequestration technologies and passing legislation establishing a regulatory framework for the geologic storage of carbon.		

Action # (cont.)	Priority C. Rural Generation, Distribution, and Storage	Priority D. State Energy Data	Priority E. Incentives and Subsidies	Priority F. Statues and Regulations
Action F-1.1	C-1.1			
Action F-1.2				
Action F-1.3				
Action F-1.4				
Action F-1.5				
Action F-1.6				
Action F-2.1	C-1.1			

Table F-1: Comprehensive Statutes and Regulations Matrix

The table below notes where similar strategies align across subcommittees, key statute or policy recommendations.

Action #	Action Description	Priority A. Railbelt Transmission, Generation, and Storage	Priority B. Coastal Generation, Distribution, and Storage
Action F-2.3	Encourage development of cost effective hydropower projects throughout Alaska, including ensuring that state funds are appropriated for timely investment in the Dixon Diversion hydroproject as project feasibility warrants. (See Action B-4.1).		B-4.1
Action F-2.4	RCA to consider diversification for new generation (See Action A-2.2).	A-2.2	
Action F-3.1	Provide budgetary support for the Regulatory Commission of Alaska (RCA) sufficient to improve the RCA's ability to respond timely and appropriately to the complex energy production, generation, and transmission challenges in Alaska.		
Action F-3.2	As Alaska works toward achieving a goal of $.10 cents per kw/hr the Task Force recommends maintaining and expanding the PCE Program until all Alaskans benefit from actual equitable and lower cost energy.		
Action F-3.3	Streamline state and federal permitting for energy projects within transportation/utility corridors.		
Action F-3.4	Modify 3AAC 46.270 (f) to reduce the ambiguity surrounding avoided cost standards.		
Action F-3.5	Modify AS42.05.760 to align with unified Railbelt transmission authority (See Action A-1.1).	A-1.1	
Action F-3.6	Adopt a Clean Energy Standard with incentives (See Action A-2.1).	A-2.1	

Action # (cont.)	Priority C. Rural Generation, Distribution, and Storage	Priority D. State Energy Data	Priority E. Incentives and Subsidies	Priority F. Statues and Regulations
Action F-2.3				
Action F-2.4				
Action F-3.1				
Action F-3.2				
Action F-3.3			E-3.1	
Action F-3.4				
Action F-3.5				
Action F-3.6				

Table F-1: Comprehensive Statutes and Regulations Matrix

The table below notes where similar strategies align across subcommittees, key statute or policy recommendations.

Action #	Action Description	Priority A. Railbelt Transmission, Generation, and Storage	Priority B. Coastal Generation, Distribution, and Storage
Action F-4.1	Create a Data Department with the Alaska Energy Authority (AEA), using statute as necessary (See Data Strategy - 1).		

Action # (cont.)	Priority C. Rural Generation, Distribution, and Storage	Priority D. State Energy Data	Priority E. Incentives and Subsidies	Priority F. Statues and Regulations
Action F-4.1		D-1		

SECTION V.

NEXT STEPS

Alaska Railroad south of Denali National Park

NEXT STEPS AND ACTIONS RECOMMENDED FOR IMMEDIATE IMPLEMENTATION

The Task Force recognizes that this report will become an iterative planning tool to be continually updated to meet the mandate of A.O. No. 344 and A.O. No. 345. Updates to this report will become more comprehensive in nature as actions are implemented across agencies and departments. This report is intended to guide institutions in building programs and policies that promote energy affordability, reliability, and resilience.

The actions listed below are those actions the Task Force feels are ready for immediate implementation to help advance the overall actions/outcomes identified in the plan. These actions deserve to be considered for further development by the Governor or the Legislature in the coming legislative session. Detailed description of each of these actions can be found in **Appendix II- Action Detail Summary.**

High priority actions are as follows:

Railbelt A-1.1: Unify all existing transmission assets along the Railbelt and Bradley Lake under AEA or a new not-for-profit regulated utility.

Railbelt A-2.1; Incentives E-2.1(3); and Statutes F-3.5: Adopt a Clean Energy Standard with incentives to diversify generation

Railbelt A2.3.1; A2.4.1; and A2.4.2: Progress known near- and long-term energy diversification projects to a go/no-go decision (i.e., Dixon Diversion, Susitna Watana, AKLNG, Bullet Line and Alternatives)

Coastal B-1.1; B-1.2; B-1.3; B-1.4; and B-1.5: Alaska Market Initiatives

Coastal B-2.3: Strengthen and Streamline the State of Alaska's internal state regulatory and land use administrative processes to accelerate approval to advance strategic energy projects and transmission for regional energy security and lower energy costs.

Coastal B-2.6; Rural C-3.1; and Incentives E-5.1(4): Recruit, Train, and Enhance Alaska workforce with technical skills and training to increase capability & capacity-building activities to lower Alaska energy costs and to sustain Alaska's growing energy infrastructure.

Coastal B-4.1: Foster, Support, and Assist Hydropower development and their transmission in Alaska to lower energy costs, provide energy security, and spur economic growth, job creation, and prosperity for Alaska.

Rural C-2.3: Fund and Construct Opportunities to Connect Rural Communities through Transmission Lines and Other Shared Energy Projects.

Rural C-3.4: Procure, install, and improve grid modernization and automation

Data D-1.1; D-1.2; D-1.3; D-1.4; D-1.5; and, Statutes F-4.1: Establish a Data Department within the Alaska Energy Authority (AEA), using statute as necessary

Data D-2.1 and D-2.2: Establish an energy data governance committee that is responsible for setting minimum protocols for data collection, quality, storage, use, and access

Data D-3.1 and D-3.2: Fund data capacity

Data D-4.1; D-4.2; D-4.3; and D-4.4: Improve existing statewide energy data and collect new, needed data with respect to electricity, heat, and transportation

Incentives E-2.1(4): Implement low-interest loan program (concessionary capital, like Power Project Loan Fund) that facilitates affordable energy development and infrastructure improvements.

Incentives E-3.1(2): Implement a strategic approach to lowering costs according to highest use communities.

Incentives E-3.1(5): Consider the development of a postage stamp rate alternative, where all Alaskans pay the same rate.

Incentives E-4.1(1): Establish a Green Bank for financing of community scale energy efficiency projects.

Incentives E-4.1(6): Reestablish the Emerging Energy Technology Fund (EETF) in order to promote public-private investment in energy technology demonstration and deployment programs.

Statutes F-1.1: Identify state matching funds necessary for all federal funds available for transmission infrastructure (also see Action F-1.6, B-2.4, C-2.3).

Statutes F-2.1: Identify state matching funds necessary for all federal funds available for generation infrastructure when a cost/benefit analysis shows a positive benefit to the state or the communities the project is intended for. (see also C-3.4).

Statutes F-2.2: Monitor and evaluate third party development of carbon capture and sequestration technologies and pass legislation establishing a regulatory framework for the geologic storage of carbon.

Statutes F-3.1: Provide support for the Regulatory Commission of Alaska (RCA) sufficient to improve the RCA's ability to respond timely and appropriately to the complex energy production, generation, and transmission challenges in Alaska.

Statutes F-3.2: Maintain and expand the PCE Program until all Alaskans benefit from actual equitable and lower cost energy.

APPENDIX I.
ADMINISTRATIVE ORDER

APPENDIX VI: ALASKA ENERGY SECURITY TASK FORCE ADMINISTRATIVE ORDERS

Table of Contents

ALASKA ENERGY SECURITY TASK FORCE
ADMINISTRATIVE ORDER NO. 344
FEBRUARY 23, 2023

ADMINISTRATIVE ORDER No. 344

FEBRUARY 23, 2023

I, Mike Dunleavy, Governor of the State of Alaska, under the authority of Article III, Sections 1 and 24 of the Alaska Constitution, and in accordance with AS 44.19.145(c), hereby order the establishment of the Alaska Energy Security Task Force ("Task Force").

BACKGROUND

On September 30th, 2022, Governor Dunleavy established the Office of Energy Innovation to provide a central point of focus for Alaska's efforts to reduce the cost of energy for residents. Alaskans suffer from exorbitantly high energy costs, restricted energy supply, and limited opportunities to drive down energy costs to consumers. Consequently, energy security and affordability are critical to Alaska's prosperity going forward. The Task Force will provide recommendations on overall energy policy for the State of Alaska, as well as strategies and tactics to achieve its goal of reducing the cost of energy to Alaska residents.

PURPOSE

The purpose of the Task Force is to develop a comprehensive statewide energy plan that will evaluate energy generation, distribution, and transmission for the State of Alaska and its communities. The development of this plan will include collaboration with public and private stakeholders. The statewide energy plan, including proposed timelines and milestones, will be presented to the governor upon completion.

MEMBERSHIP

The Alaska Energy Security Task Force will consist of thirteen voting members and five ex officio members appointed by, and serving at the pleasure of, the governor. The governor shall select two co-chairs from the voting members.

The voting members are as follows:

- The Commissioner of the Department of Environmental Conservation, or the Commissioner's designee.
- The Commissioner of the Department of Natural Resources, or the Commissioner's designee.
- The Executive Director of the Alaska Energy Authority, or the Executive Director's designee.
- One member from the University of Alaska with a background in energy.
- One member from a utility that represents rural Alaska or a community receiving power cost equalization.
- One member who represents a city, borough, or municipality.
- One member with a Railbelt utility background.
- One member from the oil and gas industry.
- One member from the mining industry.
- One member with a background in economic development.
- One member from the business community.

- One member from any segment of the Alaskan energy industry.
- One member of the general public.

The five ex officio members are as follows:

- One member from the Regulatory Commission of Alaska.
- One representative from the Denali Commission.
- One representative from the U.S. Department of Energy, Arctic Energy Office.
- One member of the Alaska State Senate, appointed by the Senate President, and one member of the Alaska House of Representatives, appointed by the Speaker of the House.

DUTIES AND RESPONSIBILITIES

The Task Force plan shall include the following:

- Establish a baseline energy portfolio for the State of Alaska.
- Identify and evaluate potential future changes that could occur to energy supply and distribution in the state; the impacts of such changes; and the opportunity for mitigating impacts and leveraging opportunities associated with such change.
- Identify solutions for meeting Alaska's energy needs now and in the future with a focus on affordability, reliability and security.
- Identify policies, programs, regulatory changes, and funding that could accelerate adoption of these energy strategies.
- Develop and maintain a public database of taskforce information and recommend strategies for sharing energy data and information through an energy data portal.
- Recommend a statewide energy goal, a plan to achieve it, and identify additional work that may be required to refine this vision.

The Task Force shall deliver an initial report to the Governor by May 19, 2023. Once the report is received, further clarification and deliverables may be identified that would require additional work by the Task Force.

The co-chairs of the Task Force shall report regularly to the Office of the Governor on activities conducted and issues that arise under this Order.

ADMINISTRATIVE SUPPORT

The Task Force is assigned to the Governor's Office of Energy Innovation for administrative purposes.

GENERAL PROVISIONS

Consistent with law and available appropriations, each designated state agency shall use existing personnel and monetary resources to comply with this Order.

Task Force members receive no compensation or other remuneration from the state for their service as members; however, members of the Task Force who are not state or federal employees are entitled to per diem and travel expenses in the same manner permitted for members of state boards and commissions under AS

39.20.180. Per diem and travel expenses for members of the Task Force who are a representative of a state or federal agency are the responsibility of that agency.

The Task Force may create advisory-only subcommittees.

The Task Force will meet monthly, at a minimum. Additional meetings may be called by the co-chairs. The Task Force and its subcommittees will use teleconferencing and other electronic means, to the extent practicable, in order to gain maximum public participation at minimum cost.

At times and locations to be determined by the co-chairs, the Task Force may convene public meetings to present information and receive comments.

Meetings of the Task Force and any subcommittee shall be conducted in accordance with AS 44.62.310 – 44.62.319 (Open Meetings Act).

Records of the Task Force and any subcommittee are subject to inspection and copying as public records under AS 40.25.100 – 40.25.295 (Alaska Public Records Act).

EFFECTIVE DATE AND DURATION

This Order takes effect immediately. The Task Force will sunset on October 31, 2023.

DATED this 23rd day of February, 2023.

ALASKA ENERGY SECURITY TASK FORCE
ADMINISTRATIVE ORDER NO. 345
MARCH 22, 2023

ADMINISTRATIVE ORDER No. 345

March 22, 2023

I, Mike Dunleavy, Governor of the State of Alaska, under the authority of Article III, Sections 1 and 24 of the Alaska Constitution, and in accordance with AS 44.19.145(c), hereby revoke Administrative Order 344, establishing the Alaska Energy Security Task Force ("Task Force"), and issue this Administrative Order 345, reinstating the Task Force with a revised membership and reporting structure.

BACKGROUND

On September 30th, 2022, Governor Dunleavy established the Office of Energy Innovation to provide a central point of focus for Alaska's efforts to reduce the cost of energy for residents. Alaskans suffer from exorbitantly high energy costs, restricted energy supply, and limited opportunities to drive down energy costs to consumers. Consequently, energy security and affordability are critical to Alaska's prosperity going forward. The Task Force will provide recommendations on overall energy policy for the State of Alaska, as well as strategies and tactics to achieve its goal of reducing the cost of energy to Alaska residents.

PURPOSE

The purpose of the Task Force is to develop a comprehensive statewide energy plan that will evaluate energy generation, distribution, and transmission for the State of Alaska and its communities. The development of this plan will include collaboration with public and private stakeholders. The statewide energy plan, including proposed timelines and milestones, will be presented to the governor upon completion.

MEMBERSHIP

The Alaska Energy Security Task Force will consist of fifteen voting members and five ex officio members appointed by and serving at the pleasure of the governor. The governor shall select a Chair and two Vice-chairs from the voting members.

The voting members are as follows:

- Lieutenant Governor Dahlstrom.
- The Commissioner of the Department of Environmental Conservation, or the Commissioner's designee.
- The Commissioner of the Department of Natural Resources, or the Commissioner's designee.
- The Executive Director of the Alaska Energy Authority, or the Executive Director's designee.
- One member from the University of Alaska with a background in energy.
- One member from a utility that represents rural Alaska or a community receiving power cost equalization.
- One member who represents a city, borough, or municipality.
- One member with a Railbelt utility background.
- One member from the oil and gas industry.
- One member from the mining industry.

- One member with a background in economic development.
- One member from the business community.
- One member from any segment of the Alaskan energy industry.
- Two members of the general public.

The five ex officio members are as follows:

- One member from the Regulatory Commission of Alaska.
- One representative from the Denali Commission.
- One representative from the U.S. Department of Energy, Arctic Energy Office.
- One member of the Alaska State Senate, appointed by the Senate President, and one member of the Alaska House of Representatives, appointed by the Speaker of the House.

DUTIES AND RESPONSIBILITIES

The Task Force's comprehensive energy plan shall include the following:

- Establish a baseline energy portfolio for the State of Alaska.
- Identify and evaluate potential future changes that could occur to energy supply and distribution in the state, the impacts of such changes, and the opportunity for mitigating impacts and leveraging opportunities associated with such change.
- Identify solutions for meeting Alaska's energy needs now and in the future with a focus on affordability, reliability, and security.
- Identify policies, programs, regulatory changes, and funding that could accelerate adoption of these energy strategies.
- Develop and maintain a public database of taskforce information and recommend strategies for sharing energy data and information through an energy data portal.
- Recommend a statewide energy goal, a plan to achieve it, and identify additional work that may be required to refine this vision.

The Task Force shall deliver an initial report to the Governor by May 19, 2023 . Once the report is received, further clarification and deliverables may be identified that would require additional work by the Task Force.

The Chair of the Task Force shall report regularly to the Office of the Governor on activities conducted and issues that arise under this Order.

ADMINISTRATIVE SUPPORT

The Task Force is assigned to the Governor's Office of Energy Innovation for administrative purposes.

GENERAL PROVISIONS

Consistent with law and available appropriations, each designated state agency shall use existing personnel and monetary resources to comply with this Order.

Task Force members receive no compensation or other remuneration from the state for their service as members; however, members of the Task Force who are not state or federal employees are entitled to per diem and travel expenses in the same manner permitted for members of state boards and commissions under AS 39.20.180. Per diem and travel expenses for members of the Task Force who are a representative of a state or federal agency are the responsibility of that agency.

The Task Force may create advisory-only subcommittees.

The Task Force will meet monthly, at a minimum. Additional meetings may be called by the Chair. The Task Force and its subcommittees will use teleconferencing and other electronic means, to the extent practicable, in order to gain maximum public participation at minimum cost.

At times and locations to be determined by the Chair, the Task Force may convene public meetings to present information and receive comments.

Meetings of the Task Force and any subcommittee shall be conducted in accordance with AS 44.62.310 – 44.62.319 (Open Meetings Act).

Records of the Task Force and any subcommittee are subject to inspection and copying as public records under AS 40.25.100 – 40.25.295 (Alaska Public Records Act).

EFFECTIVE DATE AND DURATION

This Order takes effect immediately. The Task Force will sunset on October 31, 2023.

DATED this 22nd day of March, 2023.

ALASKA ENERGY SECURITY TASK FORCE
ADMINISTRATIVE ORDER NO. 345 AMENDED
October 30, 2023

Administrative Order No. 345 Amended

October 30, 2023

I, Mike Dunleavy, Governor of the State of Alaska, under the authority of Article III, Sections 1 and 24, of the Alaska Constitution, hereby amend Administrative Order 345, which reinstated the Alaska Energy Security Task Force ("Task Force"), to extend the Task Force's sunset date.

BACKGROUND

On February 23, 2023, Governor Dunleavy established the Alaska Energy Security Task Force in Administrative Order 344. The purpose of the Task Force is to develop a comprehensive statewide energy plan that will evaluate energy generation, distribution, and transmission for the State of Alaska and its communities. Administrative Order 344 provided that the Task Force will sunset on October 31, 2023.

On March 22, 2023, Governor Dunleavy rescinded Administrative Order 344, and reinstated the Task Force with a revised membership and reporting structure in Administrative Order 345.

SUNSET DATE

In order to allow sufficient time for the Task Force to complete its work, the Task Force will sunset on December 1, 2023.

EFFECTIVE DATE

This Order takes effect immediately.

DATED this 30th day of October 2023.

APPENDIX II.

ADDITIONAL ACTION DETAIL SUMMARY

STRATEGY A-1: UNIFY & UPGRADE TRANSMISSION & STORAGE

ACTION A-1.1:

Unify all existing transmission assets along the Railbelt and Bradley Lake under Alaska Energy Authority (AEA) or a new not-for-profit regulated utility.

Background:

The "Railbelt" refers to the interconnected electric grid that stretches approximately 700 miles from Fairbanks through Anchorage to the Kenai Peninsula. About 70 percent of Alaska's population is served by the Railbelt electric system. The Alaska Energy Authority (AEA) owns the Bradley Lake Hydroelectric Project, the largest hydroelectric plant in Alaska. Energized in 1991, Bradley Lake generates the lowest-cost electricity on the Railbelt and provides clean power to more than 550,000 Alaska residents. There is now a unique opportunity to leverage past investments in Bradley Lake. Through further federal, state, utility and private sector investment in specific shovel-ready capital projects, Alaska can optimize Bradley Lake's value without incurring significant additional costs to Alaskans. The Alaska Energy Authority (AEA), in partnership with the five Railbelt utilities, has identified several opportunities for transmission line upgrades and battery energy storage systems that will reduce existing constraints on the Railbelt grid by increasing the Kenai Peninsula's transmission capacity to export power from Bradley Lake hydropower, while also allowing for the integration of additional renewable energy generation. The current system is in need of upgrades to facilitate a diverse fuel supply portfolio.

The Bradley Hydroelectric Project, which sends power to utilities across the Railbelt, has been constrained in its operation since its completion in 1991. The challenge is the lack of an adequate transmission system to deliver the project's energy and capacity from Kachemak Bay to Anchorage and Fairbanks. A single 115 kV line from Soldotna to Cooper landing serves the community of Sterling and transfers the constrained 90 megawatt (MW) output of Bradley Lake from Soldotna to Cooper Landing. From Cooper landing to Anchorage, there is another single 115 kilovolt (kV) transmission line delivering both the 16 MW generated at the Cooper Lake hydroelectric project, and the constrained output of Bradley Lake, to Bradley participants including Seward Electric on the Kenai, Chugach Electric and Matanuska Electric in the central region, and Golden Valley Electric in the Fairbanks-Delta Junction area (northern region). Together, these two Kenai lines cover 146 miles. Finally, the Alaska Intertie, a 170-mile single 138 kV line, delivers power from Willow to Healy, serving communities along the Parks Highway. Two 138kV lines connect Healy to Fairbanks, and a single 138kV line connects Fairbanks to Delta Junction. The proposed improvements to the electrical system will reduce line losses, operating costs, and increase resilience.

AEA and the Railbelt utility owners are currently in the process of designing upgrades to the transmission lines from Bradley Lake north to Kenai Lake and adding Battery Energy Storage Systems. Transmission lines will be brought up to 230 kV specification in phase one then transitioned over to operating at 230 kV. Batteries will be installed at Anchorage, Fairbanks, and Soldotna. Upgrades would increase the capacity for transferring energy between regions, improve resilience to events, ensure power continues to flow, and allow additional generation with fewer losses on the bulk power system. Further, AEA and Railbelt utilities are seeking federal funding to construct a second line between Soldotna and Healy to allow Bradley Lake power to reach consumers along the Railbelt even when one line is out of service on either a scheduled or unscheduled basis.¬

Benefits:

- Reduces transmission constraints on Railbelt grid, while also allowing for the quicker integration of additional renewable energy generation.
- Provides system redundancy, resilience, and increases reliability.
- Benefits utilities and ratepayers by sharing power throughout the region.
- Reduces costs for consumers and promotes job creation.
- Coordinates planning, financing, and construction of new infrastructure.
- Augments and diversifies Environment, Social, and Governance investment portfolio holdings.

STRATEGY A-1: UNIFY & UPGRADE TRANSMISSION & STORAGE

ACTION A-1.1 (CONT.):

Unify all existing transmission assets along the Railbelt and Bradley Lake under AEA or a new not-for-profit regulated utility.

How Do We Get There?

Specific tasks to accomplish this action are outlined below:

- Unify all existing transmission assets along the Railbelt and Bradley Lake to AEA or a new not-for-profit regulated utility.
- Develop financing plan.
- Develop transmission, operation, and control reform (potentially the Iceland model) with a regulated version of management committee.
- Align ERO statute and regulations with transmission reform.
- Complete design, permitting, and right-of-way acquisitions.
- Execute construction and commissioning.

Implementation Timeline:

2023 – 2035

Expected Results:

This strategy will result in a more resilient and reliable transmission and electric grid system that will lower rates, help bring online clean energy, reduce costs for consumers, and promote job creation.

STRATEGY A-2: DIVERSIFY GENERATION

ACTION A-2.1:
Adopt Clean Energy Standard and Incentives to Diversify Generation

Background:
Today, 80-90% of the Railbelt's energy (heat and power) is generated using Cook Inlet (CI) natural gas, a supply source which is forecasted to fall short of demand as soon as 2027. Alaska utilities may likely need to import Liquified Natural Gas (LNG) to meet short term supply needs and this is anticipated to increase the cost of energy and introduces potential energy security concerns. In order to ensure a secure, local supply of energy that is affordable and reliable, the Task Force Railbelt Subcommittee set a long term goal of significantly diversifying the Railbelt's energy generation.

Today, many proven and cost competitive electricity generation technologies exist and are ready for at-scale deployment across the Railbelt, and the state as a whole. Alternative technologies for central heat generation are not as ready to deploy and distributed heat generation solutions such as heat pumps point to electricity generation as their source. Based on this, the Railbelt Subcommittee recommends a near term focus on diversifying electricity generation. This will conserve natural gas for heat while increasing energy security with local and diverse electricity generation projects.

In order to ensure Alaska's future energy mix is affordable, reliable and secure, it's critical that diversification targets are set and positively reinforced. To ensure strong commitment and action to electricity generation diversification the Railbelt Subcommittee recommends the State adopt a Clean Energy Standard with incentives for new generation projects and for utilities when diversification goals are reached. The Railbelt Subcommittee considered both a Renewable Portfolio Standard and a Clean Energy Standard. Ultimately a Clean Energy Standard was preferred as it allows the widest range of generation technologies to compete driving affordability and gives Alaska the most options to diversify. Secondly, a Renewable Portfolio Standard policy typically includes penalties when targets are not met. Given Alaska's co-op utility structure, these penalties would pass directly to co-op members and drive up electricity prices which is counterproductive to the Task Force objective of affordable energy. Penalties may also likely lead to utility staff spending time to request relief or negotiate penalties where issues are encountered with meeting diversification targets; tying up valuable utility staff time and distracting staff from deploying new generation projects. Based on this, the Railbelt Subcommittee recommends providing incentives for generation diversification rather than penalties to drive the right behaviors, action and outcomes for our State. The Railbelt Subcommittee recommends the following incentives be implemented with a Clean Energy Standard:

1. **Direct Payment to Utilities for Achieving Diversification Targets:** Ultimately, it is up to each individual utility to agree to terms with these different types of generation so that it can be included in their portfolio. To incentivize utilities to consider a variety of options, the State of Alaska can award each utility with a direct payment when diversification targets are reached. This direct payment rewards utilities for diversifying and will result in an immediate reduction of rates for consumers, aligning with the Task Force mission of affordable energy.

2. **Augmentation of the Renewable Energy Fund (REF):** To facilitate significant diversification of statewide electricity generation, with a particular emphasis on the Railbelt, it is important to have many generation projects being developed as only a small fraction will succeed in being fully developed. Project development is inherently risky and carries the most uncertainty, particularly for generation technologies which have not been broadly deployed in Alaska. To encourage numerous and diverse generation project development, the State should augment the Renewable Energy Fund to provide matching funds for development expenses. The intent of this funding structure is that grant funds will be a small fraction of the total project cost but will be awarded at a time when the project is most vulnerable. This will increase the number of projects being developed and accelerate the diversification of the Railbelt electricity generation.

ACTION A-2.1 (CONT.):
Adopt Clean Energy Standard and Incentives to Diversify Generation

3. **Augmentation of the Power Project Fund (PPF):** New generation projects can also face obstacles with securing competitive debt terms for projects in Alaska given it's remoteness and that for many technologies is seen as a nascent market. Debt interest rate and term (duration) significantly affect project economics and ultimately the energy price paid by consumers. Providing a reliable debt source for generation projects which diversify the Railbelt's power generation will increase the number of successful projects, reduce the energy cost to consumers and earn the state a modest return. Given the funding scale of these projects, it's important that this capital support from the state is structured as a loan and not a grant. This ensures responsible project spending while generating a return for the state.

Benefits:
Diversify statewide, with a particular emphasis on Railbelt Electricity Generation

- Conserve CI natural gas supply for heating and base load to integrate new generation sources
- Provide secure electricity supply through locally built generation projects
- Enable affordable energy across the state
- Increase energy reiliability where no one source dominates or threatens overall supply
- Economic development with local projects

How Do We Get There?

Institute a Clean Energy Standard with Incentives to facilitate reaching diversification goals

- Clearly state Railbelt generation diversification percentages and target dates
- Adopt the following incentive program to drive diversification:

1. **Direct Payment to Utilities for Meeting Diversification Targets:**

- All direct payments to a Utility from the State of Alaska are a direct pass through to energy consumers
- Establish a $/% diversification value and diversification percentages at which payouts are received
- Payout will be made if diversification percentage is achieved by target date
- Direct payment from the State will be used by the utility to directly lower member costs, effectively lowering the cost of electricity
- Ideally the incentive payment would be illustrated on member bill so public can see the benefit of utility diversification

2. **Augment the Renewable Energy Fund to:**

- Provide up to 50/50 matching funds for projects which diversify the community or regional generation mix.
- The projects must demonstrate how they're providing affordable energy that is reliable and local
- Matching funds will be used for project development costs only
- Allocate annual funding for this program such that funding is secure and can be efficiently deployed. Increase the reward cycle (e.g. 2x/yr) to enable new project ideas to move forward with development at a faster pace than the current annual REF award process.
- Increased operational funding for AEA to accommodate increased administrative workload, including but not limited to elements such as additional staff or consultants to assist in program and/or application streamlining.

STRATEGY A-2: DIVERSIFY GENERATION

ACTION A-2.1 (CONT.):
Adopt Clean Energy Standard and Incentives to Diversify Generation

3. **Augment the Power Project Fund to:**
   - Provide loans, for all development phases, for projects greater than 10MW in size
   - For projects greater than 10MW increase the approval thresholds for AEA Board and Legislative approval such that it is commensurate with utility scale projects
   - Adequately capitalize the PPF program to support utility scale generation projects
   - Provide operational funding staffing to efficiently and timely process increased volume of loan applications.

Implementation Timeline:
Implement policy change in 2023/2024 legislative session

Expected Results:
- Diverse electricity generation projects being built over the next 10-15 years
- Accelerated diversification timeline
- Lower cost power from new generation projects, ultimately flowing down in the form of reduced rates for ratepayers across varying time domains.
- Economic development across those funded communities, including the Railbelt.

STRATEGY A-2: DIVERSIFY GENERATION

ACTION A-2.2:

Modify existing statute(s) requiring the Regulatory Commission of Alaska (RCA) to consider long term diversification goals when approving additional/new Railbelt power generation.

Background:
The general powers and duties of the RCA are defined in Alaska Statute 42.05.141. Specifically, it is tasked with the power to "appear personally or by counsel and represent the interests and welfare of the state in all matters and proceedings involving a public utility[.]" The Railbelt Generation, Distribution, Transmission, and Storage Subcommittee (RGDTSS) has determined that the state should be working toward a long-term goal of diversifying power generation with an emphasis on local supply, reliability, and affordability. In support of this goal, the RGDTSS recommends the legislature amend AS 42.05.141 to broaden the RCA's scope of considerations and ensure it has the ability to consider projects related to power generation.

Benefits:
- The amended statute provides the RCA with more definition on what truly is in the best "interest and welfare of the state" beyond just setting reasonable rates and promoting conservation.
- Pushes the Railbelt utilities towards diversification of power generation.

How Do We Get There?
- Amend AS 42.05.141 (c) add new subpart (d) and renumber existing subpart (d) as follows:

  (c) In the establishment of electric service rates under this chapter the commission shall promote the conservation **and diversification** of resources used in the generation of electric energy.

  (d) When considering whether the establishment or approval of electric service rates under this chapter is in the public interest the commission shall

  (1) recognize the public benefits of allowing a utility to negotiate different pricing mechanisms with different suppliers and to maintain a diversified portfolio of resource contracts to protect customers from the risks of inadequate supply or excessive cost that may arise from a single pricing mechanism; and

  (2) consider whether a utility could meet its responsibility to the public in a timely manner and without undue risk to the public if the commission fails to approve a rate or a contract proposed by a utility.

  (e) When considering whether the approval of a rate or a gas supply contract proposed by a utility to provide a reliable supply of gas for a reasonable price is in the public interest, the commission shall…[.]

Implementation Timeline:
Implement timeline is in the 2023/2024 Legislative Session.

Expected Results:
This structured execution list offers a clear roadmap of the proposed steps to promote the Action to lower the energy cost for Alaskans for future generations.

STRATEGY A-2: DIVERSIFY GENERATION

ACTION A-2.3:
Progress Known Near Term Energy Diversification Projects to a Go/No-Go Decision: Dixon Diversion

Background:
The Alaska Energy Authority (AEA) owns the Bradley Lake Hydroelectric Project (Bradley Lake), which has been a low-cost source of electricity for the Railbelt and 550,000 Alaskans for more than 30 years. The 120-megawatt (MW) facility generates about 10 percent of the total annual power used by Railbelt electric utilities at some of the lowest-cost energy in the state. The "Railbelt" refers to the interconnected electric grid that stretches approximately 700 miles from Fairbanks through Anchorage to the Kenai Peninsula. About 70 percent of Alaska's population is served by the Railbelt electric system.

The proposed Dixon Diversion Project would boost the energy potential of Bradley Lake, the largest hydroelectric plant in Alaska. The project would be located five miles southwest of Bradley Lake dam, approximately 27 miles northeast of Homer on the Kenai Peninsula, and divert water from Dixon Glacier, increasing the annual energy production of Bradley Lake by 50 percent — or the equivalent of 24,000-30,000 homes. Bradley Lake currently electrifies the equivalent of 54,000 homes.

Benefits:
- Increases Bradley Lake's energy production capacity by 50 percent by leveraging existing generation assets.
- Enhances Alaska's energy security by increasing renewable penetration and grid stability, improving resilience to fuel price fluctuations and supply side disruptions, and regulating other renewable energy.
- Fosters economic development through job creation.
- Promotes environmental sustainability.
- Power Sharing Agreements with Railbelt Utilities provide stable long-term returns through revenue stability and market risk mitigation.
- Produces a substantial amount of renewable energy that will reduce greenhouse gas emissions and combat climate change.
- Augment and diversify Environment, Social, and Governance investment portfolio holdings.
- All land is owned by the State of Alaska

How Do We Get There?
AEA is currently conducting feasibility studies to assess the potential of increasing hydroelectric power generation at Bradley Lake. These studies include engineering studies (feasibility, hydrological, geological) and environmental studies (fisheries, water quality, and geomorphophology). The Dixon Diversion Project would expand Bradley Lake by capturing outflow from the Dixon Glacier and conveying it to Bradley Lake for generation. The main project components include:
- Small diversion dam and intake below the Dixon Glacier,
- Gravity flow 4.7 mile tunnel to Bradley Lake, and
- Raise of Bradley dam to lake level by 14 feet.

Implementation Timeline:
2023 – 2025: Engineering and Environmental Studies
2026 – 2027: Federal Energy Regulatory Commission (FERC) License Amendment
2028 – 2032: Construction

Expected Results:
The increased storage would provide Bradley Lake with an additional 55,000 megawatt-hours of "battery storage."

STRATEGY A-2: DIVERSIFY GENERATION

ACTION A-2.4.1:
Progress Known Long Term Energy Diversification Projects to a Go/No-Go Decision: Susitna Watana

Background:
The Susitna-Watana project has been on hold since 2017. Considerable expenditures were made to develop and license the project in the 1980s and from 2010 to 2017. The project is a viable alternative to meet the State's goal of 80 percent sustainable power by 2040. Once the project is licensed the State has a 10-year window before construction must begin. This should afford sufficient time for the State to determine the most advantageous approach to build the project.

Alaska has a strong track record of developing successful hydroelectric projects that provide clean, reliable energy across the state. Hydroelectric power is Alaska's largest source of renewable energy, supplying about 27 percent of the state's electrical energy in an average water year. Dozens of hydro projects provide power to Alaskans, including the 120-megawatt Alaska Energy Authority-owned Bradley Lake project near Homer, which supplies 10 percent of the Railbelt's electrical energy. The "Railbelt" refers to the interconnected electric grid that stretches approximately 700 miles from Fairbanks through Anchorage to the Kenai Peninsula. About 70 percent of Alaska's population is served by the Railbelt electric system.

AEA has completed a feasibility level design and was approximately two-thirds of the way through the Federal Energy Regulatory Commission (FERC) Integrated Licensing Process when it was paused by the previous administration. To proceed, the FERC licensing process would need to be completed at a cost of $50-100 million. The anticipated construction cost is $5.6 billion ($2014). Financing type and level are not yet finalized, but AEA's financial consultant recommended Rural Utilities Service (USDA) and government obligation bonds or by the private sector, financial modeling indicated the lowest long term cost of energy compared with other fuel sources.

Project Summary:
Dam Height: 705 feet

Dam Elevation: 2,065 feet

Reservoir Length: ~42 miles

Reservoir Length: ~1.25 miles

Capacity at full pool: 618 MW

Annual Energy: 2,800,000 MWh

Cost: ~$5.6 billion (2014$) (including licensing and construction)

Benefits:
The proposed Susitna-Watana Hydroelectric Project is a large hydro project that would provide long-term stable power for generations of Alaskans. The project would result in approximately 70 percent of the power generated in the Railbelt originating from renewable sources, up from the current 15 percent — a nearly four-fold increase. As part of the project, transmission lines will be connected to the existing Railbelt transmission system providing a more secure transmission system, and an access road will be constructed. The Susitna-Watana Hydroelectric Project will help provide reliable power for future generations of Alaskans, diversify Alaska's energy portfolio, and accelerate the transition to renewable energy.

STRATEGY A-2: DIVERSIFY GENERATION

ACTION A-2.4.1 (CONT.):

Progress Known Long Term Energy Diversification Projects to a Go/No-Go Decision: Susitna Watana

How Do We Get There?

1. Update the Project Management Plan with specific focus on the approach, budget, and schedule to complete licensing activities.

2. Update construction cost and project economics

3. Meet with FERC staff to determine the licensing approach and studies necessary for FERC to conduct their National Environmental Policy Act (NEPA) process and make a licensing decision.

4. Go/no go decision for final FERC licensing.

Implementation Timeline:

Update the Project Management Plan regarding approach, budget, and schedule, including updating construction cost and project economics before a decision is made to complete FERC license.

- Preparation, Planning, Collaboration, and Environmental Studies 2-3 years
- FERC Review & Determination 2 years
- Project Execution Phase & Construction Phase 9-11 years
- Operational Phase 100 years

Expected Results:

Based on the economic studies conducted a decade ago, the project remained a viable alternative with a levelized power cost of about 6.5 cents per kWh. Based on this information and the amount of power the project would generate annually, the project remains a viable alternative to meeting the Energy Security Tasks Forces goals. The State should undertake the tasks outlined above to successfully license the project. Once the project is licensed, the State has options to complete the project.

STRATEGY A-2: DIVERSIFY GENERATION

ACTION A-2.4.2:

Progress Known Long Term Energy Diversification Projects to a Go/No-Go Decision: AKLNG, Bullet Line & Alternatives

Background:
Set up the State of Alaska to have a long term source for heat and base load power that maximizes the value to Alaskans and enables long-term energy generation diversification . In the next two years, parallel path three options to minimize regret cost of short term LNG import and enable timely decision making, including (1) Provide full support to enable the AKLNG project, (2) complete project development for the North Slope Natural Gas Bullet Line and (3) complete a robust analysis of alternative sources for heat and base load power.

Today, 80-90% of the Railbelt's energy (heat and power) is generated using Cook Inlet (CI) natural gas, a supply source which is forecasted to fall short of demand as soon as 2027. For at least the next couple decades, natural gas will be an essential resource to meet heat demand across the Railbelt and provide base load for electricity generation, allowing for diversification and integration of new clean energy generation projects.

The Alaska Utilities Group conducted a Phase 1 assessment ("June 2023 Utiliites Study") of Cook Inlet gas supply and options to meet future demand. The June 2023 Utilities Study determined that the median case gas supply shortage in the Cook Inlet is projected to be 8 BCF/yr beginning in 2028 and grow to 52 BCF/yr in 2040. In the short term, in order to meet the expected supply gas shortfall in 2027-2028, a decision to pursue LNG imports will likely need to be made in late 2023. While importing energy does not provide as much local economic development or price and supply certainty, this option may be preferred due to its ability to meet the natural gas supply shortage in a short term execution window. In the mid-term an in-state natural gas supply is preferred as it shifts the economic development benefit to Alaska and provides an opportunity for reliable and stably priced natural gas supply for decades.

The 2023 contract price for natural gas from the Cook Inlet is approximately $8/Mcf. Imported LNG is forecast to cost approximately $12-$16/Mcf. The June 2023 Utilities Study evaluated several options to meet existing natural gas demand, and key options are summarized below.

- AKLNG: $4.40-$5.8/Mcf
- In-State North Slope Gas Pipeline "Bullet Line" (Private): $28.1-$37.0/Mcf
- In-State North Slope Gas Pipeline "Bullet Line" (80% State Participation): $7.3-$12.6/Mcf
- Continued Cook Inlet Gas Exploration/Development: $9.3-$25.5Mcf (limited supply)

Given the state-wide economic development opportunity and affordable gas supply price of the AKLNG project, the Task Force Railbelt Subcommittee recommends the state strongly support bringing this project to fruition. The Task Force Railbelt Subcommittee set a long term goal to significantly diversify electricity generation such that it is affordable, reliable and sourced in-state, and it is important to note that if the AKLNG project is progressed, it should not divert the state from diversifying electricity generation as this is critical for long term energy security.

As it is not a given that the AKLNG project will advance to construction, the Railbelt Subcommittee recommends that the state take action now to complete project development (funding plan, financing terms, permitting research and cost estimating) for the Bullet Line option such that in two years time the State is poised to make a go/no-go decision to either proceed with this project or shelve it. As with any project, the delivered natural gas price from an in-state North Slope pipeline varies widely depending on the funding plan and financing terms. Therefore, the state needs to complete further development to understand the competitiveness of this option.

Also in parallel the State should complete a robust analysis of alternative options including but not limited to, (1) development of other Alaska natural gas basins, (2) long term conversion of heat supply to electricity and (3) other alternative proven heat supply technologies (e.g. geothermal).

STRATEGY A-2: DIVERSIFY GENERATION

ACTION A-2.4.2:

Progress Known Long Term Energy Diversification Projects to a Go/No-Go Decision: AKLNG, Bullet Line & Alternatives

If the AKLNG project does not proceed, the Bullet Line and the alternatives should be compared and a decision made based on the long term goal of providing energy that is affordable, reliable and preferably sourced in-state such that the projects can be constructed and the energy will be available prior to the time that the Cook Inlet gas shortage is forecast to become significant (early 2030's). Ultimately the state needs to set itself up to make a decision on the long term source for heat and base load electricity generation to maximize the benefit to Alaskans. Without taking action now to progress project concepts to a decision making point, there is a significant risk that near term importation of natural gas will become the long term default solution.

Benefits:
Ensure energy supply for heat and base load electricity generation that is affordable, reliable and sourced in-state

- Reliable energy supply at known long term price to consumers
- Local economic development
- Assurance that energy supply is best long-term option for Alaskans
- Timely decision making to prevent further regret cost with short-term supply options and opportunity cost with delayed alternative solutions

How Do We Get There?
In the next two years, progress the following in parallel

1. Provide full state support to progress the AKLNG project
2. Complete project development for the Bullet Line project to make a go/no-go decision on this option
3. Complete a robust analysis of heat and base load power alternatives and progress viable options to a maturity where a go/no-go decision can be made.

Implementation Timeline:
2023/2024

Expected Results:
Ensure mid to long term energy source for heat and base load electricity is the best option that maximizes the value to Alaskans

STRATEGY A-3: INCREASE DEMAND

ACTION A-3.1:

Significantly increase load to drive down energy rates.

Background/Benefits:

All other things being equal, if the fixed infrastructure costs of a power grid are spread over more customers and greater energy loads, customers will end up paying less on a per-kWh basis. This strategy has been used in Iceland, for example, where a high volume of production and sales have created efficiencies and economies of scale. According to analysis provided by Holdmann and Gudleifsson (in preparation), Iceland's total electric production and Alaska's tracked very closely until the mid-1990s, as did the delivered cost for electric power. After that point in time, the trajectories diverged significantly both in terms of annual production and sales as Iceland actively courted and attracted large industry (aluminum smeltering) to its electric grid. This new industry increased Iceland's energy demand by four-fold. Iceland's cost of power delivered to the customer's meter is now $0.7-$0.13 per kWh, as compared with $0.19-$0.26 for power from Alaska's Railbelt grid.

A similar approach could be undertaken on Alaska's Railbelt to drive the cost of power down for all customers and spur continued economic growth. Examples of new, large customers on the Railbelt could include ore processing of locally-resourced materials as well as new fuel generation production facilities for the transportation industry (air carriers, shipping, etc.), among others. A key insight is that Iceland simultaneously sought out new industry and committed to lower than current energy costs to incentivize industry to select Iceland as the preferred location.

How Do We Get There?

This strategy assumes that necessary transmission capacity and reliability upgrades are completed to handle increased loads. To facilitate and incentivize substantial load growth, three possible actions were identified, including (1) issuing an RFP to industry for a large load that would be provided at a guaranteed low energy price (the energy price could be tiered based on amount of load growth), (2) providing tax credits or similar offsets for proposed large load customers to reach attractive power rates, and (3) identifying sites along the Railbelt which are already built to handle load growth.

1. Upon sufficient analysis of rates achievable by large load additions to the Railbelt, an RFP could be issued by a coordinating Railbelt entity, utility, or the State guaranteeing a rate for power in exchange for the load addition to the grid. Such an approach would eliminate risk for a potential large industrial customer and also ensure load growth for the Railbelt. Long term rate stability would promote industry investment and aggregation of demand side resources.

2. Alternatively, if a potential industrial customer could not add enough load to the grid to guarantee a satisfactorily low rate, the State could offset the difference with a tax credit or similar vehicle. Again, this approach would help eliminate risk for the new industrial customer and attract economic investment in the state. The tax credit amount would be informed by the estimated savings to utility co-op members due to the load growth associated with the new industrial customer.

3. In concert with the above actions, it is important to identify areas on the Railbelt that are well-suited to large load growth in the short term, without necessarily waiting for transmission upgrades. Identification of these sites would help potential large industrial customers hone in on realistic locations and spur investment. In addition to specific sites, there may be larger geographic areas that can accommodate rapid growth of distributed loads, such as electric vehicles and heat pumps. These "load-friendly" areas could be further enhanced by management of of the distributed loads ("load as a resource") so they can strengthen, not strain, the grid.

STRATEGY A-3: INCREASE DEMAND

ACTION A-3.1 (CONT.):
Significantly increase load to drive down energy rates.

One risk of these actions is potential cost overruns in the buildout of any required generation for increased loads, the contingencies and responsible parties for which would need to be considered carefully. However, this risk must be viewed in context because cost overruns from new infrastructure would likely be even *more* problematic *without* load growth.

Implementation Timeline:

1. Identify areas within the Railbelt which are well-suited for load growth (minimal to no upgrades or new generation needed): 1-2 years

2. Establish incentivized industry/anchor tenant rates: 1-2 years.

3. Issue state-led RFP for new industry articulating $/kWh rate scale based on load growth amount or state tax incentives to offset energy cost for new industrial customers based on load growth savings to co-op members: 2-5 years

Expected Results:

The Railbelt will significantly increase its load to drive down prices for all consumers and spur economic development overall.

STRATEGY B-1: ALASKA MARKET INITIATIVES

ACTION B-1.1:

Integrate and Promote Heat Pump technology and systems (ASHP, SWHP, GSHP) as an Alternative Energy Resource in Coastal Alaska.

Background:
Heat pumps are widely used in Northern Europe, with over 90% market penetration. They efficiently provide affordable heating even at temperatures as low as 13˚ F, lowering the costs in these arctic, subarctic, and temperate regions.

		2014	2015	2016	2017	2018	2019	2020	2021	2022
Table 3.5-1: Heat pump market shares development by country - space heating	Denmark	43.9%	54.3%	56.5%	69.2%	72.0%	75.8%	80.4%	82.6%	91.4%
	Estonia	77.5%	77.6%	80.7%	80.5%	79.9%	80.5%	82.5%	86.0%	86.7%
	Finland	88.1%	86.6%	87.4%	88.9%	90.5%	92.5%	93.5%	94.7%	96.5%
	Norway	95.4%	96.0%	96.9%	96.5%	96.7%	96.6%	96.3%	97.6%	98.0%
	Sweden	90.6%	90.8%	91.3%	91.4%	91.0%	90.9%	90.8%	92.1%	94.8%

Source EHPA-European Heat Pump Market and Statistics 2023

Several communities of Alaska are experiencing a significant transformation from more expensive fossil fuel heating sources to lower-cost heat pumps, saving Alaska households.

Benefits:
How can Alaskans and Alaskan communities capture the lessons learned from Northern Europe, Canada, and Maine in ensuring that Alaskans gain from these successes and promote the same opportunities to lower their energy costs and improve their quality of life by spending less of their income on home heating?

How Do We Get There?
Strategies and Tactical Steps for Advancing Heat Pump Adoption in Alaska:
a. Collaborate Internationally: Partner with the European Heat Pump Association https://www.ehpa.org/ and the International Energy Administration Heat Pump Centre https://heatpumpingtechnologies.org/about/heat-pump-centre/ to leverage models and programs that have successfully increased heat pump adoption. Collaborate with Provinces of Canada that have heat pump adoption programs

b. Collaborate with Maine State Housing Authority and Efficiency Maine to learn of their programs to adapt and adopt a tailored State of Alaska heat pump program with the following suggestions

c. Homeowner Financing: Offer zero or low-interest loans to homeowners through AHFC and related programs, enabling Alaskans to transition to cost-effective heat pump heating systems.

d. Business and Public Facility Financing: Provide zero or low-interest loans via AHFC and other state organizations for businesses, apartment complexes, schools, governmental buildings, and NGO facilities to adopt heat pumps. This effort aims to reduce heating expenses for these entities, ultimately benefiting Alaskans.

e. Community Heating Solutions: Allocate funds for community District Heating projects that utilize heat pumps, further decreasing energy expenses for Alaskan residents.

f. Have AHFC publish and adopt for use the Juneau Commission of Sustainability fuel price calculator to assist communities and individual households with their annual fuel savings and use the savings to assist in financing for heat pump purchase and installations https://juneau.org › wp-content › uploads › 2019 › 06 › jcos_fuel_price_calculator-.xlsx

g. Bulk Purchasing: Collaborate with top manufacturers and suppliers to buy heat pumps in bulk, ensuring Alaskans receive a discounted rate and, consequently, more affordable heating solutions.

STRATEGY B-1: ALASKA MARKET INITIATIVES

ACTION B-1.1 (CONT.):
Integrate and Promote Heat Pump technology and systems (ASHP, SWHP, GSHP) as an Alternative Energy Resource in Coastal Alaska.

h. Workforce Training: Invest in workforce development initiatives with Alaska's trade unions and contractor associations. High-quality training ensures high-quality heat pump installations across Alaskan communities.

i. Public Education: Partner with Alaskan non-profits such as Alaska Heat Smart and tribal organizations with heat pump programs to educate the public about heat pump benefits. This includes offering building assessments for heat pump suitability and providing unbiased advice and recommendations.

j. Utility Billing Integration: Obtain RCA authorization allowing electrical utilities to introduce on-bill financing. This lets Alaskans conveniently pay off their heat pump loans directly through their utility bills, streamlining the repayment process for consumers and AHFC alike.

k. RPACE-Residential Property Assessed Clean Energy. Consider State adoption of a streamlined, easy-for-consumer RPACE program. USDOE best practice guidelines: https://www.energy.gov/sites/prod/files/2016/11/f34/best-practice-guidelines-RPACE.pdf

l. Federal Support: Pursue federal aid and funding to bolster State of Alaska initiatives and community projects. This support will drive the widespread adoption of heat pumps, ultimately reducing energy costs for Alaskans.

Implementation Timeline:
This action item has a blend of Immediate and short-term tasks for implementation.

Expected Results:
The State of Alaska, with careful and planned execution, can Advance and Promote Heat Pump technology and systems (ASHP, SWHP, GSHP) as an Alternative Energy Resource in Coastal Alaska that is tried and proven in other arctic, sub-arctic, and temperate locations. The expected results will lower Alaskan's heating costs and reduce the dependency on imported fuels, creating demand for the development of local energy resources to displace imported fuels.

This structured execution list offers a clear roadmap of the proposed steps to promote the adoption of heat pumps in Alaska to lower the cost of heating in Alaska.

STRATEGY B-1: ALASKA MARKET INITIATIVES

ACTION B-1.2:

Plan, finance, and support the execution of Shore power at Public and Private Cruise Docks to Sell Excess Energy to Cruise Ships.

Background:
Alaska set the standard for cruise ship shore power in Juneau, a model now global. This system benefits cruise lines financially, extends their stay in Alaskan ports, and fortifies our coastal grids. All modern cruise ships, including those being built today, are shore-power compatible. Seward and Whittier, with their utilities, are now developing these facilities. Efficient shore power involves precise transmission infrastructure, substations, and quick-connect equipment for cruise ships requiring 3MW to 8MW each. For perspective, Juneau's Franklin dock, with full shore power utilization, recorded over 6,000 MWh in a single cruise season. Such infrastructure investments uplift not just the cruise sector they also bolster community resilience and present affordable energy alternatives, enhancing community energy reliability and assisting the State and communities to reduce the cost of power for Alaskans.

Benefits:
By spearheading shore power, Alaska boosts its grid reliability, attracts local energy investments, and showcases greener, emission-free ports—enhancing its global appeal. The Alaska shore power task and purpose propels job growth and infrastructure enhancement, supports industries, augments energy resilience, and slashes energy bills for its residents.

How Do We Get There?
Alaska Energy Authority (AEA) provides technical oversight and assistance to communities, Independent Power Producers (IPP's), and local utilities to develop a shore power electrification plan to provide shore power at all cruise dock facilities in Alaska.

AEA and Alaska Industrial Development and Export Authority (AIDEA) support public-private transmission, distribution, and generation investments to execute shore power in Alaska communities using state head tax funding distributed and accountable to AEA.

Dept of Commerce and Community Development (DCCED) AEA, and the Regulatory Commission of Alaska (RCA) encourage communities to develop shore power planning for future-proofing generation and distribution infrastructure to meet current and future demand, fully utilizing Alaska generation and transmission resources.

AEA/AIDEA Develop a technology term sheet and outline for communities using known and established Alaska and worldwide shore power engineering and infrastructure firms established with tried and proven late generation (automated quicker connect and disconnect times) shore power distribution, BESS, and shore-to-ship connection infrastructure. EPS-Anchorage, WABTEC Stemman Technik, and other late shore power generation systems.

State of Alaska engage with Alaska's congressional delegation to modify federal transportation statutes and programs to include and support cruise marine vessel port funding on par with freight ports.

State of Alaska, AEA Establish and encourage cruise line industry participation and support in statewide shore power planning.

AEA/AIDEA Support by encouraging and funding power generation projects that support firm power generation for cruise line shore power during cruise season and supply winter load power in the off-season to bolster local energy resilience and security.

STRATEGY B-1: ALASKA MARKET INITIATIVES

ACTION B-1.2 (CONT.):

Plan, finance, and support the execution of Shore power at Public and Private Cruise Docks to Sell Excess Energy to Cruise Ships.

Identify legislative and regulatory modifications to support shore power installations in coastal communities to support economic development.

State, DCCED, and private companies combine Alaska tourism marketing programs to incorporate Alaska's strategy to shore power Alaskan ports to assist in marketing Alaska as a clean port state destination.

AEA provides engineering systems to assist with pre-engineer systems to the extent possible to reduce purchase costs, gain consistency in systems, and incorporate local Battery Energy Storage Systems to enable local utilities to ramp up and provide quick connect and disconnect times using proven late-generation technologies used in fast connecting ports worldwide.

Implementation timeline:
This action item has a blend of Immediate and short-term tasks for implementation.

Expected results:
The State of Alaska has the potential to take a leadership role in shore power development by executing a carefully planned strategy. By focusing on shore power, Alaska can expand the demand for renewable energy. This increased demand can then stimulate further growth and construction of the state's renewable energy sources. The ultimate goal is for Alaska to be recognized globally as a leader in shore power implementation. Successful results have multiple benefits: higher revenues for utilities, encouraging investment in the energy generation and distribution infrastructure, enhancement of the State's energy resilience, reliability, and capacity, and decreasing energy costs for the residents of Alaska.

Additionally, dock electrification resources could provide electrical delivery from ship to shore emergency power to communities in the event of natural disasters providing an energy security back up for distressed communities.

STRATEGY B-1: ALASKA MARKET INITIATIVES

ACTION B-1.3:

Beneficially electrify the Alaska Ferry Fleet to lower cost of transportation, and emmissions and assist in reducing the cost of power in coastal communities.

Background:
Alaska Department of Transportation & Public Facilities (DOT&PF) and Southeast Conference (SEC) are partnering to conduct a Low Emission Ferry Research project. Alternative fuel powered, low-emission, and electric ferries could be a game-changer for Alaska's Marine Highway System, as DOT&PF starts to replace AMHS's aging fleet in upcoming years. Fuel efficient ferries could increase the range and capacity of the fleet, potentially increasing service to communities and reducing AMHS operating costs.

Benefits:
How can Alaskans, Alaskan communities, utilities, and independent power producers work together or independently to finance, execute, and operate Battery Energy Storage System (BESS) to integrate additional power supplies, assist in serving cruise ships, and stabilize local and regional transmission and distribution grids.

How Do We Get There?
Strategies and Tactical Steps for Advancing Action

- Refine shoreside energy storage system sizing for expected future vessel schedules.
- Prepare site plans for each port where a shore-side charging BESS is beneficial to meet current and future charging demands. Consider:
  - Permitting difficulties;
  - Floating vs. Shoreside.
- Investigate the capacity of available hydro power and impacts to the community where it is expected to be the primary source for powering electric ferries. Evaluate the impact to local power costs from periods of constricted supply when diesel power plants must be utilized to supplement or replace hydro power.
- Develop benefit calculation for avoided greenhouse gas emissions due to use of electric ferry routes powered by greenhouse gas neutral-generation electricity.
- During Low/No Emission port and BESS design, consider incorporating electric motor vehicle (National Electric Vehicle Infrastructure Program – NEVI) charging stations.

Implementation Timeline:
This action item has a blend of Immediate and short-term tasks for implementation.
- 3-5 years to secure funding from IIJA and other sources for specific ferry replacement projects.
- 5-10 years to complete design and construction of IIJA-financed vessels.

Expected Results:
- Lower carbon emissions compared to conventional diesel-mechanical engines.
- Increased electric utility revenues from purchase of electricity by BESS.
- Purchase of electricity at less than peak-rates for lower cost energy to AMHS ferries.
- BESS supported microgrids in AMHS communities.
- More reliable ferry service to AMHS communities.

This structured execution list offers a clear roadmap of the proposed steps to promote the Action to lower the energy cost for Alaskans.

STRATEGY B-1: ALASKA MARKET INITIATIVES

ACTION B-1.4:

Identify and support the colocation of industrial loads (e.g., data servers) with Alaska Hydropower facilities for synergies to lower energy costs.

Background:
Alaskan entities and government agencies built many legacy Alaska hydropower projects in Coastal Alaska to serve industrial loads. Many of the legacy hydropower assets of Juneau were developed, constructed, and operated by mining interests to power mills and lower the cost of mining. This tried and proven model of building hydropower to subscribe the generation output to large mines and other industrial loads provides economies of scale to finance large hydropower and transmission investments by creating economies of scale. The hydropower development history of Alaska and the colocation of industrial loads offer valuable lessons learned for Alaska as Alaska leans forward to increasing its energy security, and resilience and achieving lower-cost energy. These legacy hydroelectric facilities built in the past now provide the lowest-cost wholesale power in Alaska, proving the long-term investment model through providing long-term energy dividends in some cases for over 100 years.

The large customer concept whereby a hydropower project serves the Alaska industrial base, be it a military installation, a mine, a fish processing plant, or future industries like data service centers or even transferring a power consumptive industry (ferries, cruise ships, trains-such as electrifying the Alaska railroad) from diesel to electric provides the opportunity to colocate industrial loads near hydropower generation that can provide firm and conditionally firm power to establish lynchpin industry and employment in Coastal and Alaskan communities situated with hydropower resources. This concept is a tried and proven Alaska energy model based on historical development.

Today, the added benefit of producing clean power to meet Environmental, Social, and Governance (ESG) further compels the attraction of industry to use Alaska hydropower. ESG refers to the three central factors in measuring an investment's sustainability and societal impact on a company or business. These criteria are increasingly becoming crucial to investment decisions, as many investors recognize the long-term importance of sustainable operations for business success. In the context of investing, Socially conscious investors evaluate and screen investments for sustainability and ethical considerations using ESG metrics. Companies with strong ESG profiles may be deemed more future-ready and less risky in facing regulatory or reputational challenges. Colocating industrial loads with clean hydropower can competitively assist the State and investing companies in reducing regulatory and reputational risks.

Additionally, hydropower offers another product form that can generate revenues to lower costs of energy: cold water. The cold outtake water from a hydroelectric facility is valuable for circulating cooling water for data servers that require chilled rooms to operate efficiently. Colocating future data server operations at or near hydropower locations is a recent phenomenon that offers lower-cost energy to operate the data servers and reduces server chilling costs necessary to operate data server centers at peak efficiency.

Indeed, large industrial loads such as mines, data server centers, fish processing and freezing operations, and other large energy-consumptive industries provide the requisite economies of scale to finance and build hydropower opportunities in Alaska but also invigorate clean industrial development that not only creates and sustains family wage jobs but also provides the trajectory to lower energy costs through economies of scale.

Benefits:
Strategically collocating large industries, such as mines, fish processing plants, military bases, and data centers, near hydropower facilities is a game-changer for Alaska. It offers a dual benefit: fostering economic growth and ensuring cost-effective, sustainable energy for Alaskans. By leveraging the enduring 100-year lifecycle of hydropower, which has the lowest cost over time, Alaska can capitalize on its historic model of harnessing hydropower to drive industrial growth. This symbiotic relationship boosts Alaska's economic prosperity, creating jobs and opportunities and guarantees the most affordable power for its residents.

ACTION B-1.4 (CONT.):

Identify and support the colocation of industrial loads (e.g., data servers) with Alaska Hydropower facilities for synergies to lower energy costs.

How Do We Get There?

1. Unified Policy Development :

- Policy-making entities: Governor's Office, Department of Commerce and Community Economic Development (DCCED), Alaska Industrial Development and Export Authority (AIDEA), and Alaska Energy Authority (AEA) can collaborate to devise a policy promoting the recruitment and facilitation of industrial load development in Alaska to mate with future hydroelectric development. This collaboration of policy can leverage the historically successful Alaskan energy model to achieve multiple and synergistic Alaska benefits: local economic prosperity, energy security, job creation, and long-term reductions in energy costs.

2. Promotion of Long-term Hydropower Resources:

- DCCED, AIDEA, AEA, and RCA should advocate and actively recruit for developing enduring hydropower resources, emphasizing their anchoring by industrial loads. Through strategic industrial colocation, hydropower, and related transmission, Alaska can harness the compounded benefits and ensure lower-cost energy for its residents throughout the century-long lifecycle of hydropower assets.

3. Legislative Action for Industry Attraction:

- The Alaska legislature should enact laws and regulations incentivizing industries to align with Alaska's hydropower potential. Legislative action would underscore the vast economic advantages and clean energy outcomes resulting from maximizing the use of existing hydropower and fostering the creation of new hydropower projects within the State to advance the stated multiple and synergistic Alaska benefits that this initiative inspires.

4. Assistance and cooperative support for local initiatives and developments

- DCCED, AIDEA, AEA, and RCA assist local communities and hydropower developers in local initiatives and development of optimizing hydropower assets and industrial loads to provide synergistic Alaska benefits, including lowering the energy cost for Alaskans.

Governors office, DCCED, AIDEA, and AEA, develop a policy that supports the recruitment and attraction of industrial load development in Alaska using this proven Alaska energy model for multiple beneficial purposes: prosperity, energy security, job creation, and long-term lower energy costs.

DCCED, AIDEA, AEA, and RCA support the development of long-term hydropower resources anchored by industrial loads and colocation/transmission of hydropower to achieve the synergistic benefits and obtain lower-cost energy for Alaskans over the 100-year life cycle of hydropower assets.

Alaska legislature enacts legislation to attract industry and support the colocation of Alaska industrial development to subscribe to new hydropower generation economically, recognizing the substantial economic prosperity and clean energy emissions benefits of fully subscribing to current hydropower and developing and constructing new hydropower in Alaska.

STRATEGY B-1: ALASKA MARKET INITIATIVES

ACTION B-1.4 (CONT.):
Identify and support the colocation of industrial loads (e.g., data servers) with Alaska Hydropower facilities for synergies to lower energy costs.

Implementation Timeline:
This action item has a blend of Immediate to long-term tasks for implementation.

Expected Results:
This proposed roadmap enables Alaska to tactically accelerate the positive development of new hydropower assets by strategically positioning and transmitting clean hydropower energy to industrial loads. The economies of scale of industrial sales assist hydropower in meeting economic viability while paying down the debt to offer the lowest cost power over time. This tried and proven Alaska hydropower/industrial load model can repeat itself as Alaska looks to develop the next tranche of hydropower assets to meet Alaska's energy needs to propel economic prosperity and achieve lower-cost energy for Alaska's current and future generations.

STRATEGY B-1: ALASKA MARKET INITIATIVES

ACTION B-1.5:

Identify, Assist, and fund Battery Energy Storage Systems (BESS) and other Energy Storage Systems (ESS) for successful integration into Coastal communities to increase energy security, increase grid resilience, and lower energy costs.

Background:
BESS/ESS technology has advanced to the point that indicates significant potential savings for communities that are dependent on diesel power generation for electrical needs. Some new supercapacitor systems boast 97% efficiency and estimate up to 75% savings in diesel fuel consumption to provide equivalent power using BESS/ESS. US DOD is looking at exploiting this technology in Alaska. Other utilities have deployed other BESS technologies and energy storage works, promising to stabilize Alaska grid networks and microgrids.

There are several BESS demonstration projects currently being tested in Alaska. BESS technology provides a potential opportunity to significantly lower the cost of power generation in some rural and coastal Alaskan communities.

Background on Battery Energy Storage System (BESS):

1. Functionality: Simply, BESS stores electrical energy for use at a later time. BESS is especially important for integrating intermittent forms of renewable energy and immediately supplying large quantities of energy in seconds or minutes (supplying power to cruise ships) while stabilizing grid operations.

2. Components: A BESS typically includes the following:

Batteries: These are the actual storage units and can be of various types, such as lithium-ion, lead-acid, flow batteries, etc.

Power Electronics: This includes inverters and converters, which help transform electricity from AC to DC (and vice versa) and control the flow of electricity.

Control Systems: These manage the BESS's operations, ensuring it charges and discharges at the correct times and maintains optimal performance.

Thermal Management Systems: Maintaining a stable temperature is crucial for battery longevity and safety.

3. Types of Batteries: The most common type used in modern BESS installations is the lithium-ion battery due to its high energy density, long cycle life, and decreasing costs. However, other types, like flow and solid-state batteries, are being researched and deployed for specific applications.

Advantages of Battery Energy Storage Systems (BESS):

1. Grid Stability and Reliability: BESS can absorb or release power quickly, helping to stabilize grids, especially when there's intermittent renewable generation like solar or wind, and is especially useful in turning on and off large periodic loads like cruise ships.

2. Peak Shaving: Batteries can be charged during off-peak hours when demand (and often cost) is low and then discharged during peak demand times. BESS helps utilities and consumers reduce costs and can prevent the need for firing up expensive and potentially polluting "peaker" power plants or forego electric sales waiting for ramp-up times from other sources.

STRATEGY B-1: ALASKA MARKET INITIATIVES

ACTION B-1.5 (CONT.):
Identify, Assist, and fund Battery Energy Storage Systems (BESS) and other Energy Storage Systems (ESS) for successful integration into Coastal communities to increase energy security, increase grid resilience, and lower energy costs.

3. Integration of Renewables: Batteries make it easier to integrate renewable energy sources by storing excess energy when it's available and releasing it when needed.

4. Microgrids & Energy Independence: In areas with unreliable grid connections or no connection at all, BESS can form the backbone of Coastal community grids that can operate independently and withstand outages.

5. Reduced Transmission and Distribution Investment: By placing BESS at strategic locations, utilities can delay or avoid expensive upgrades to transmission and distribution infrastructure.

6. Load Leveling: By storing energy during periods of low demand and releasing it during high demand, BESS can help level out the demand curve, ensuring a consistent power supply and reducing stress on the grid.

7. Backup & Emergency Power: BESS can serve as an emergency power source during outages, ensuring continuity in critical facilities like hospitals.

8. Support for Electric Vehicle (EV) Charging: As EV adoption grows, BESS can ensure that rapid charging stations get the power they need without causing strain on the local grid.

9. Economic Benefits: With the suitable RCA regulatory structures in place, BESS operations can pay for themselves by providing various grid services, from frequency regulation to capacity services.

10. Environmental Benefits: BESS can significantly reduce greenhouse gas emissions by enabling more renewable energy integration and reducing the need for fossil fuel-based peaker plants.

Benefits:
How can Alaskans and Alaskan communities, utilities, and independent power producers work together or independently to finance, execute, and operate Battery Energy Storage System to integrate additional power supplies, assist in serving cruise ships, and stabilize local and regional transmission and distribution grids, while lowering energy costs and improving their quality of life by spending less of their income on home energy costs and promoting local economic development?

How Do We Get There?
Strategies and Tactical Steps for Advancing BESS/ESS Adoption in Alaska:

a. Gather data from modeling and from existing BESS/ESS demonstration projects in Alaska to determine actual diesel fuel savings, and power reliability to meet demand, maintenance, and operation costs.

b. Gather proven performance data from BESS projects to prove out cost-saving claims.

c. Funding: Support local community efforts to access to Energy Improvement in Alaska to include rural or Remote Areas grants through the US Dept of Energy, Office of Clean Energy Demonstrations (OCED).

d. PPP: Encourage rural/coastal communities to pursue innovative financing vehicles to attract public-private-partnerships (PPP) and investment.

ACTION B-1.5 (CONT.):

Identify, Assist, and fund Battery Energy Storage Systems (BESS) and other Energy Storage Systems (ESS) for successful integration into Coastal communities to increase energy security, increase grid resilience, and lower energy costs.

e. Public Facility Financing: Offer zero or low-interest loans to communities through AHFC and related programs for power generation to purchase and install BESS/ESS systems to improve reliability and lower energy costs.

f. Bulk Purchasing: Encourage local communities in regions to pursue discounted contracts with BESS/ESS providers for multiple unit purchases.

g. Workforce Training: Invest in workforce development initiatives with Alaska's trade unions and contractor associations. High-quality training ensures high-quality BESS/ESS operation and maintenance across Alaskan communities.

Implementation Timeline:
This action item has a blend of Immediate and short-term tasks for implementation.

Expected Results:
Alaska's Energy Revolution with BESS/ESS

- **Strategic Approach:** Alaska can effectively deploy BESS/ESS, a proven energy solution in similar climates.
- **Multiple Gains:** This leads to reduced power costs, decreased fossil fuel use, full utilization of energy resources by saving energy surpluses when available, and lower Greenhouse Gas (GHG) emissions.
- **Power Stability:** Enhances energy reliability throughout Alaska in both interconnected and stranded grid systems.
- **Coastal Advantages:** Enables coastal areas to support cruise ships and port growth.

In essence: With careful planning, Alaska can capitalize on BESS/ESS for cleaner, cheaper, and more resilient power, benefiting railbelt, rural, and coastal communities.

This structured execution list offers a clear roadmap of the proposed steps to promote the adoption of BESS/ESS in Alaska to lower the cost of heating in Alaska and improve local energy security and grid resilience, helping communities achieve Task Force goals of Affordability, Reliability, and Resilience.

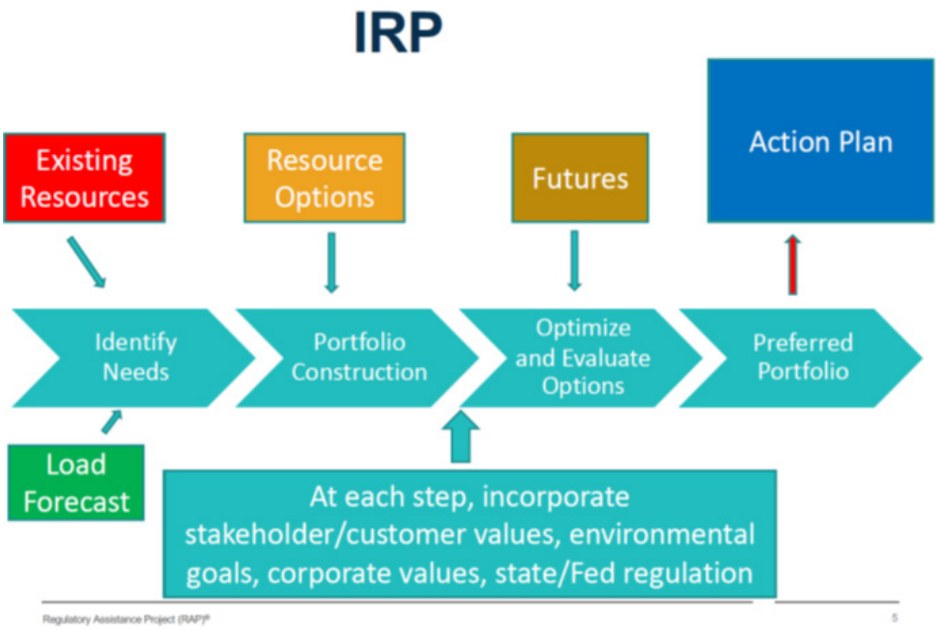
STRATEGY B-2: ALASKA POLICY RECOMMENDATIONS

ACTION B-2.1:

Establish, require, assist, and implement community Integrated Resource Plans (light) to forecast energy demand and generation for community and regional future energy needs to lower energy costs.

Background:

Integrated Resource Plans (IRP) and their associated forecasts of demand, generation, transmission, and distribution with public input are a tried and proven electrical industry methodology to coalesce State and community energy goals openly and transparently. Large utilities with regulatory oversight can engage in extensive plans that require deeply engaging studies. On the other hand, a lighter integrated resource planning analysis based on the collaboration of community energy needs is a cost-effective approach to local strategic and tactical energy planning required to move toward lower energy costs.



All communities engaged in future supply uncertainty, rising demand for heat pumps, conversion from fossil fuel use to lower-cost renewables, and electrified transportation benefit from intelligent and collaborative planning from utilities, communities, non-utility generators, and the public. The critical component in this process is public participation, as it provides an opportunity to educate the public, build support and constituencies required to advance renewable energy projects and transmission, and ultimately focus on lowering the energy cost for Alaskans.

According to the Pacific Northwest National Laboratory (PNNL), Over 35 US states require utilities to file IRPs or equivalent planning yearly or up to once every four years. These requirements are imposed either through regulation or legislation. The US Department of Energy (DOE), in its 2016 publication, "Sustainable Energy Solutions for Rural Alaska, provided a recommendation for Alaska Utility resource planning to identify a utility's least-cost path over time. These efforts are sometimes called "least-cost integrated resource plans" or simply "integrated resource planning" (IRP) when the scope of the resource decisions include demand-side considerations. The DOE publication explained that the IRPs typically include scenario planning and consideration of uncertainty. IRPs are also typically high-level plans frequently with time horizons of 20 years that look at a broad array of resource choices. However, they may include specific project-related and transmission analysis in the near term (i.e., 1-5 years).

STRATEGY B-2: ALASKA POLICY RECOMMENDATIONS

ACTION B-2.1 (CONT.):

Establish, require, assist, and implement community Integrated Resource Plans (light) to forecast energy demand and generation for community and regional future energy needs to lower energy costs.

Benefits:
The State of Alaska can optimize State resources (and parlay federal resources) by establishing, requiring, assistng and implementing and Integrated Resource Plan Light (IRPL) for every utility in Alaska that requires a periodic update to ensure that local and grassroots energy planning is occurring collaboratively at the local Alaskan level with utilities, tribes, non-utility operators, community leadership, NGO's and the Alaska public so that there is a unified focus and format to ensure that no community is left behind in Alaska's transition to lower cost and self-sustaining energy for current and future generations of the affected community.

How Do We Get There?
Establish an Alaska-based IRPL, easy-to-implement model and format. Upon acceptance of the RCA, request each regulated Alaska utility to guide on with minimally established requirements based on prudent IRP practices. This model and format can be initiated and supervised by the Alaska Energy Authority and collaborated with the Regulatory of Alaska and Attorney General Office, Regulatory Affairs & Public Advocacy Section (RAPA). Municipal utilities and other non-regulated electrical utilities in Alaska can also adopt Alaska's IRPL model.

While large Alaska utilities can use this model, the use of the IRPL would not detract from the RCA authority to impose a more robust IRP on Alaska's sophisticated electrical utilities, and the IRPL can serve as an interim or an update adjustment to a utilities existing and perhaps more robust IRP.

AEA and any state of Alaska generation and transmission funding can use the IRPL to determine the viability and economic justification of the public IRPL as a requirement to obtain state funding. RCA can be a repository for the public record and public dissemination of all Alaska utility load and generation forecasting so that other communities and interested parties can learn and adapt from other communities' planning efforts.

AEA and other state agencies can provide resources and technical assistance to assist Alaskan utilities and communities. AEA can require IRPL as a prerequisite for future assistance, aid, and funding as an incentive to collaboratively participate together to analyze the community energy needs, demands, and agreed-upon solutions to lower the energy cost for the affected community. An IRPL also certifies that a utility and a community are wisely and responsibly planning to conserve PCE burdens and preserving PCE trust funds by optimizing appropriate energy solutions on a community-by-community basis. AEA, the Denali Commission, and other state agencies can assist a community with implementing the solutions and results from a community IRPL.

Implementation Timeline:
This action item has a blend of Immediate and short-term tasks for implementation.

Expected Results:
This Action item, IRPL, with its implementation steps, offers a fundamental milestone required to methodically transition to premeditated energy planning in an open, objective, and transparent process that will lead, if properly implemented and conducted, to lower cost energy and energy security for Alaskans.

STRATEGY B-2: ALASKA POLICY RECOMMENDATIONS

ACTION B-2.2:

Strengthen Alaska's Net Metering energy framework, tariffs, and regulations for Alaska's diverse stakeholders to promote net metering investments.

Background:
Net Metering is a billing arrangement for owners of renewable energy systems. Under Net Metering, excess electricity generated by an Alaskan customer's renewable energy system is sent back to the utility grid, offsetting the electricity the customer draws from the grid when their system isn't producing electricity. Net Metering of private energy systems plays an integral role in the ongoing transition to more sustainable and flexible power grids and lowers the costs of power for Alaskans.

Benefits:
An advanced Net Metering statutory and regulatory framework for Alaskans can optimize mutually beneficial benefits from an advanced net metering program to act as a linchpin for a sustainable, resilient, and economically advantageous energy future in the islanded grid and transmission interconnected Alaska communities to provide a diverse energy portfolio that invigorates and sustains private and public investment, provides energy security and grid resiliency benefits while lowering the energy costs for Alaskans.

How Do We Get There?
Investigate, evaluate, recommend, and update/modify changes to Alaska's net metering laws and regulations for Best Management Practices (BMP) based on other successful State net metering programs.

Encourage the Alaska Energy Authority (AEA), Alaska Housing and Finance Corporation (AHFC), Denali Commission, and other agencies to assist and finance community, tribal, business, and residential net metering investments in Alaska to improve grid stability and resilience and lower energy costs.

Policy Framework and Regulation:
Develop through the Governor's office, AEA, and Regulatory Commission of Alaska (RCA) a clear, supportive regulatory framework that invigorates and favors net Metering incorporating vigorous net metering models and best management practices (BMP). Provide resources, leadership, and agency assignments and oversight to ensure the resulting regulatory framework provides long-term clarity and certainty to private/public investors, community energy security, and utilities.

Infrastructure Development:
Invest and finance grid infrastructure for residential, business, community renewables, and grid distribution systems to handle increased distributed energy resources and increase energy security through AHFC, AEA, AIDEA, Tribal and federal funding to facilitate grid interconnectivity for renewable energy sources.

Develop and promote short and long-term energy storage solutions, such as battery systems, to address the intermittent nature of community and residential renewable sources like solar and wind.

Incentivization and Financial Support: Develop and offer a breadbasket of incentives such as tax credits, rebates, or grants for individuals and businesses that invest in renewable energy systems. Set up a competitive feed-in tariff for excess energy fed into the grid. Work to develop State Agency and federal programs to provide zero or low-interest loans or financial incentives for energy storage solutions. Develop and structure incentives to assist higher PCE cost communities and the PCE program.

ACTION B-2.2 (CONT.):

Strengthen Alaska's Net Metering energy framework, tariffs, and regulations for Alaska's diverse stakeholders to promote net metering investments.

Outreach and Stakeholder Collaboration:
Create platforms for dialogue between utility companies, private investors, and government agencies. Incentivize and encourage utilities to develop advanced net metering models that benefit from distributed generation rather than viewing it as a threat.

Engage with Native tribes and corporations to ensure their perspectives and needs are incorporated. Encourage and direct State of Alaska (SOA) agencies and utilities to partner with Alaska university programs and renewable energy Non-Governmental Organizations (NGO), boroughs, and city governments to integrate renewable energy net metering in development planning for localized energy security, emergency planning, and sustained energy operations with natural disasters.

Develop state code and design criteria using prudent utility practices for net Metering. Consider state procurement agreements for integration hardware and controls selection and purchase.

Technology and Innovation:
Promote research and development in renewable energy net metering regimes tailored to Alaskan conditions.

Support innovation in grid management tools and technologies using best management systems to efficiently and effectively handle distributed energy.

Collaborate with tech companies to integrate advanced consumer energy management systems, such as smart meters and home energy management systems, that assist utilities and overall grid management.

Monitoring and Feedback Mechanisms:
State of Alaska: Stand up or administer/assign a dedicated agency or body to monitor utility progress and impacts of the net metering program and make suggestions to recalibrate and use adaptive management to gain incremental effectiveness of net metering regimes. Continuously gather net metering and utility participant feedback and iterate on the program's design and incentives.

Publish annual reports for AEA, AIDEA, RCA, the Governor, the Legislature, and the public to highlight achievements, challenges, and next steps.

Implementation Timeline:
This action item has a blend of Immediate, short-term, mid-term, and long-term (follow-up, review, and recalibration as necessary) tasks for implementation.

Expected Results:
The net metering roadmap places Alaska at the pinnacle of energy innovation and leadership while empowering net metering participants and utilities to collaboratively advance the state of Net Metering in Alaska as a public interest good. This strategy and tactics empower Alaskans to amplify private and public investments, fortify grid stability, strengthen grid resilience, and slash energy expenses. Embracing this Action Item, Alaska is assisting in meeting Alaska's energy demands and security while ensuring Net Metering advances are addressed collaboratively, openly, transparently, sustainably, and economically, ensuring a sustainable and cost-effective energy future that reduces the energy cost for Alaskans.

STRATEGY B-2: ALASKA POLICY RECOMMENDATIONS

ACTION B-2.3:

Strengthen and Streamline the State of Alaska's internal state regulatory and land use administrative processes to accelerate approval to advance strategic energy projects and transmission for regional energy security and lower energy costs.

Background:
The State of Alaska has multiple departments with diverse missions and responsibilities. Developing energy projects in Alaska requires developer coordination with competing agencies with differing priorities and willingness to assist a project developer. This lack of unity of effort can lead to chaos and time delays in permitting and executing energy projects and transmission with differing state agencies. There is a need for a navigation coordinator and assistance for Alaska communities and Alaska renewable energy developers to coordinate among the differing State Agency requirements.

Benefits:
The development of State policies and oversight that produce a coordinated and affirmative mindset for developing cost-effective renewable energy and transmission lines in Alaska lowers energy costs for Alaskans while also assisting developers in their pursuit with federal agencies in meeting national clean energy goals through mutual cooperation, respect, and understanding.

How Do We Get There?
Establish an Alaska Energy Authority (AEA)-sponsored in-state working group/oversight body between the Governor's Office, AEA, and State agencies to find common ground and purpose to streamline renewable energy, transmission, and energy project interconnection permitting, regulations, and State of Alaska authorizations. The focus and mindset are to "promote" and develop sustainable energy projects and related transmission lines to accelerate permit processing and get to "yes" renewable energy development to lower costs and increase energy security for Alaskans.

Each State agency and department conducts a critical internal review to identify permitting and authorization bottlenecks that impede or slow down renewable energy development and then develop internal agency courses of action and corrections necessary to fulfill the overarching directive to lower the cost of power for Alaskans.

Each State agency assigns a Change Officer duty and responsibility for implementing and executing departmental administrative changes based on permitting review/audit and course of action analysis.

Develop an energy development interdepartmental liaison between Commissioners and delegated staff to coordinate and accelerate renewable energy project and transmission development.

Identify state laws or regulations that impede or block renewable energy and transmission development and make recommendations to change statutes and regulations for the Governor and legislative leadership to accelerate energy development, transmission, and interconnections to lower the cost of energy for Alaskans and Alaska industry.
Create directional versus aspirational intentions to deliver results for Alaska's citizens desiring the lowest long-term and sustainable energy costs.

Create directional versus aspirational intentions to deliver results for Alaska's citizens desiring the lowest long-term and sustainable energy costs.

STRATEGY B-2: ALASKA POLICY RECOMMENDATIONS

ACTION B-2.3 (CONT.):

Strengthen and Streamline the State of Alaska's internal state regulatory and land use administrative processes to accelerate approval to advance strategic energy projects and transmission for regional energy security and lower energy costs.

Implementation Timeline:
This action item has a blend of Immediate and short-term tasks for implementation.

Expected Results:
The State of Alaska, with careful and planned execution, can advance and promote Alaska's renewable energy development with cooperation, support, and a unity of effort between State agencies to support and accelerate the growth of Alaska's renewable energy resources for the maximum benefit of Alaskans, reducing energy costs and providing the energy security that Alaskans are entitled to from their State government leadership.

This structured execution list offers a clear roadmap of the proposed policy initiatives and steps to promote the coordinated and cooperative development of energy resources between and among state agencies to provide a unity of effort to execute the State energy plan and lower the energy cost for Alaskans.

STRATEGY B-2: ALASKA POLICY RECOMMENDATIONS

ACTION B-2.4:

Strategize and Prioritize State of Alaska funding to match federal funding and federal financing to build and expand sustainable Transmission and Distribution Lines in Alaska to bring Alaska on par with the US transmission system for Alaskan energy security and lower energy costs.

Background:
Despite its vastness, covering 17.5% of the US landmass, Alaska's transmission system is strikingly underdeveloped. With only 1,697 miles of high and low-voltage transmission lines, it represents less than 0.25% of the nation's total transmission infrastructure. To put this transmission deficiency In perspective, the contiguous US boasts over 700,000 circuitous miles of these lines. Furthermore, Puerto Rico, a US territory, has 2,478 miles , while Wyoming—a state with a population size comparable to Alaska—has 4,300 miles . This subpar transmission network hampers the integration of renewable energy sources and poses challenges for military installations in ensuring transmission contingencies to support critical national security missions.

Moreover, there's an urgent need for Congressional funding action. For example, despite having Congressional authorization for $384 million for the Southeast Alaska Intertie , which aims to connect Metlakatla through Skagway, the promised funds have not been authorized. Alaska's grid modernization is not just about powering homes and lowering costs; it's crucial for national security, economic growth, and future energy resilience that Alaskans deserve.

Regardless of any metric, stating that there is a transmission need in Alaska is an understatement.

Benefits:
Alaska must upgrade its outdated territorial grid system to a modern, 21st-century standard, incorporating N-1 contingencies. This transformation is crucial for integrating renewables and other new energy sources. Bringing Alaska on par with the rest of the nation with a first-world transmission grid will reduce energy costs and enhance energy security, laying a self-reliant solid energy foundation for Alaska's future.

How Do We Get There?
Strategies and Tactical Steps for Advancing Action

Develop and create a State of Alaska Power Transmission Fund under AEA to promote, secure and establish federal authorization and appropriations funding to develop an additional 3000 miles of transmission corridor for Alaska to move Alaska from pre-territorial grid system to a grid system that ignites development and integrates renewables, displaces more expensive diesel generation reducing energy costs.

Create a system that allows AIDEA, AEA, and Federal funding to develop, design, build, execute, and operate additional regional transmission sections and lengths under a unified plan.

Implementation Timeline:
This action item has a blend of Immediate and short-term tasks for implementation.

Expected Results:
Alaska must exponentially increase its haphazard and subgrade transmission system if Alaska is to develop and maintain its economic viability. Federal funding for a State of Alaska Power Transmission Fund State of Alaska Power Transmission Fund will enable the State to develop other State Energy Plan action items. Creating a robust transmission network in the Railbelt and Coastal areas is essential for Alaska to prosper economically.

This structured execution list to develop a State of Alaska Power Transmission Fund offers a clear roadmap of the proposed steps to promote the Action to lower the energy cost for Alaskans while providing the means and funding to transform the dire transmission situation as it exists within Alaska today.

STRATEGY B-2: ALASKA POLICY RECOMMENDATIONS

ACTION B-2.5:

Establish and provide valuable energy planning and modeling metrics from State data sources, where available and requested (such as DMV electric vehicle registrations and Air Source Heat Pump (ASHP) installation) by individual communities.

Background:
Alaska community energy planning ensures a stable and sustainable energy future, providing the optimum lowest cost power over time. For community leaders, citizens, and utilities to effectively plan growth, demand, and evolving market conditions, specific metrics are required to guide decisions continuously and track progress. Further, Alaska already has many data sets available, although this information is not readily boiled down and packaged for usefulness for community decision-makers or is not widely known. There is a demand and need for community data and metrics to make wiser community energy decisions, to prepare and request grant funding, and to position communities for greater energy self-reliance, energy security, and ultimately to lower the cost of energy-heating, electricity, and transportation.

Some key indicators and metrics could assist local energy planning and decision-makers in no priority order.

1. Energy Consumption:
- Total energy consumed per sector (e.g., residential, commercial, industrial).
- Per capita energy consumption.
- Forecasted energy consumption due to market condition changes-shore power, industrial loads, beneficial electrification in heating and transportation sectors.

2. Energy Production:
- Total energy produced from various sources (e.g., solar, wind, fossil fuels).
- The capacity factor of energy-producing installations (how often they produce energy compared to their maximum potential).

3. Energy Efficiency:
- Energy saved due to efficiency measures.
- Forecasted energy efficiency savings due to energy efficiency measures

4. Energy Import/Export:
- Amount and type of energy and units imported/exported to or from an Alaska community or utility.
- Dependency percentages on external energy sources that can be improved with local or regional energy resources or transmission.
- Forecasted energy dependence reduction with the forecasted increase in local or regional renewable energy production to include impacts from beneficial electrification in heating and electric transportation.

5. Renewable Energy:
- Percentage of total energy derived from renewable sources.
- Installed capacity and generation from each renewable source (e.g., solar, wind).
- Forecasted installed capacity and generation from each renewable source.

6. Carbon Emissions:
- Total carbon emissions from energy production.
- Carbon intensity (carbon emissions per unit of energy produced).
- Forecasted Carbon Emission reductions from new carbon free energy sources or due from transformation from fossil fuels to renewable energy from beneficial electrification.

STRATEGY B-2: ALASKA POLICY RECOMMENDATIONS

ACTION B-2.5 (CONT.):

Establish and provide valuable energy planning and modeling metrics from State data sources, where available and requested (such as DMV electric vehicle registrations and Air Source Heat Pump (ASHP) installation) by individual communities.

7. Economic Metrics:
- Cost of energy production per unit.
- Economic benefits of energy projects (jobs created, GDP impact).
- Forecased savings over life cycle of new generation and economic quantification of other benefits-emission reductons, fuel savings, etc.

8. Energy Resilience and Reliability:
- Duration and frequency of power outages.
- Energy storage capacity.
- Forecasted energy storage capacity needs and economic and ESG quantification of benefits.

9. Energy Transition Goals:
- Targets for renewable energy adoption.
- Reduction targets for carbon emissions.
- Forecasts for transition goals with data to support transition initiatives

10. Energy Sales, volume by customer sector and price Information
- Transparent and accurate information provides objective fuel alternative calculations for collaborative community decision-making.
- Forecasted sales based on beneficial electrification, shorepower, industrial load growth, and converting interruptible sales to conditional firm power.

11. Overhead of utility costs
- Overhead cost data for comparison between similarly sized utilities to determine and approve managerial efficiencies.

12. Infrastructure Health
- Age, condition, and capacity of energy infrastructure (e.g., power plants, transmission lines).
- Forecasted infrastructure replacement and upgrades with new technology that provides operational control benefits and improves grid security and resilience.

13. Electric Vehicle number and percentage of community vehicle stock
- Estimated annual power demand and consumption
- Forecasted loads in 1 to 5 years.

14. Electric Vehicle public level 2 and level 3 charging stations
- Estimated annual power demand and consumption
- Forecasted loads in 1 to 5 years.

15. Heat Pumps
- Total Number of Air Source Heat Pump units in a community or utility, annual installation growth, and percentage breakdown of building and housing units by fuel source.

ACTION B-2.5 (CONT.):

Establish and provide valuable energy planning and modeling metrics from State data sources, where available and requested (such as DMV electric vehicle registrations and Air Source Heat Pump (ASHP) installation) by individual communities.

- Forecasted loads in 1 to 5 years.

16. Shorepower Installations
- Total number of units, annual sales, and peak demand
- Forecasted loads in 1 to 5 years.

There is a cost to producing, maintaining, and updating information. Therefore, a cost-benefit analysis would need to occur to determine the net value of each data metric. However, as data-driven decision makes progress and we mature Alaska community energy decision-making from black box data to transparent and open information scenario, data is required for planning, decision making and also enabling Alaska communities to be armed with data when competing against communities from other States in competitive federal infrastructure, energy, and emission reduction grants.

Lastly, this recommendation does not include the requirement or decision bar that Alaska or communities must have perfect data or complete data to make decisions. Too much unuseful data or requirement to have impossible-to-achieve data has historically plagued some communities and energy decisions, or opposition will use stall-by-study tactics to impede energy development and transmission build-out required to elevate Alaska on an energy security level with the rest of the country. In other words, let us not fall into the trap that the enemy of good is the requirement for perfect or complete information.

Benefits:
Alaska can help make wise local energy planning decisions, forecasting demand and supply and using data to apply for grants and assistance requiring data-driven applications. All of these actions enable community leaders with utilities and public input to plan for a community's energy needs while working toward the lowest energy cost.

How Do We Get There?
In general, "how we get there" is to support the recommendations from the Data Subcommittee of the Task Force with the insistence that the viewpoint, practical delivery, and service from data is customer-focused, being the Alaska community and decision-makers. Data should be "community customer-driven" and community-centric in its approach and philosophy of conducting and maintaining data to help and propel Alaskan communities using data in a practical and common sense approach to drive energy affordability, reliability, and resilience for Alaskans now and for the future.

Establish a Data Department within the Alaska Energy Authority (AEA) with regulatory authority to request and receive data from any electrical utility in Alaska that is issued a Regulatory Commission of Alaska (RCA) Certificate of Public Convenience and Necessity (CPCN).

Establish an energy data governance committee that is responsible for establishing minimum protocols for data collection, quality, storage, use, and access that is "customer focused" on delivering data to customers for practical and cost-effective decision-making that propels and not slows the development of energy projects, solutions, and transmission systems.

Fund data capacity on a cost/benefit and the biggest bang for the buck approach to maximize data benefits at the lowest cost.

STRATEGY B-2: ALASKA POLICY RECOMMENDATIONS

ACTION B-2.5 (CONT.):

Establish and provide valuable energy planning and modeling metrics from State data sources, where available and requested (such as DMV electric vehicle registrations and Air Source Heat Pump (ASHP) installation) by individual communities.

Improve existing energy data and collect new, needed data. Consider that if a utility and/or community desires state support from PCE and grant applications, it volunteers to judiciously supply requested data as required to ensure maximum participation in the production and use of energy data for the benefit of all Alaskans.

Implementation Timeline:
This action item has a blend of Immediate and short-term tasks for implementation as suggested by the Data Subcommittee of the Alaska State Energy Task Force.

Expected Results:
The expected results from this roadmap are for the State funded AEA Data department, as suggested and articulated by the Data Subcommittee mission is to provide customer-relevant information, metrics, and data that assist Alaska communities and utilities in making practical and wise energy decisions that lower the cost of energy, provide energy security and increase resilience for Alaska communities and electrical utilities.

STRATEGY B-2: ALASKA POLICY RECOMMENDATIONS

ACTION B-2.6:

Recruit, Train, and Enhance Alaska workforce with technical training for advancing beneficial electrification to lower Alaska energy costs and sustain Alaska's growing energy infrastructure.

Background:
Alaska has entered an unprecedented demand for apprentices and skilled electrical trade workers that are critically necessary to build out and achieve the required generation, transmission, distribution, storage, and commercial/residential wiring essential for Alaska to migrate from higher-cost fuel sources to lower-cost fuel sources. Various agencies, labor organizations, and contractors operate many training and apprenticeship programs to meet the training needs of Alaskans without an inventory of forecasted demand. When there's a shortage of workers, it disrupts the balance of supply and demand. This scarcity means Alaskans must pay higher wages to attract the limited available labor. As companies spend more on recruitment and possibly higher wages, these increased costs inflate energy project costs and raise energy costs.

Additionally, in energy generation and transmission systems, where contracts are awarded to the lowest bidder, companies must increase their bid amounts to cover the higher labor expenses and contingency risks in obtaining qualified employees to perform the work. This phenomenon can lead to higher prices for Alaska generation and transmission, construction delays, and potential quality declines. Worker shortages have immediate impacts; they ripple through the entire Alaska economy, driving up energy and transmission costs and potentially slowing growth.

Benefits:
Alaska can achieve its labor and workforce training requirements through a unity of effort with multi-year "forward planning" to engage Alaskans to successfully enter critical job skills in the electrical trades to build out the infrastructure needed to assist Alaskans in lowering the cost of energy with a self-reliant and local Alaskan workforce. With its unique challenges and vast geographic expanse, Alaska requires an innovative approach to workforce development, particularly in critical sectors like electrical trades. Meeting the state's labor and workforce training needs necessitates a holistic, long-term strategy from secondary to post-secondary and trade schools.

How Do We Get There?
Conduct an objective Alaska inventory demand and forecasting for critical skilled jobs with a multi-year forecast and then develop a plan to recruit, train, and place Alaskans to meet Alaska's needs for these critical skill sets.

Calibrate and coordinate with Alaska Dept. of Labor, Intl. Brotherhood of Electrical Workers (IBEW), other organized labor, Alaska Vocational Technical Center (AVTEC), Associated General Contractor of Alaska (AGC) , Alaska Safety Alliance to optimize resources and coordinate together to maximize results to ensure that Alaska's labor market has the skilled workers necessary to achieve results on time and on budget.

Engage trades and secondary school systems in developing advanced secondary education, enabling a seamless transition from secondary education to successful building trades job placement.

Implementation Timeline:
This action item has a blend of Immediate and short-term tasks for implementation.

Expected Results:
By harnessing Alaska's own resources and prioritizing its people, especially the coastal and rural communities, the state can build a self-reliant workforce ready for its unique challenges and opportunities that are essential in helping Alaskans lower the cost of energy, producing energy generation, transmission, and energy security for our communities and maintaining grid resilience.

Strategy B-3:*State of Alaska Coordination with Federal Agencies, State and Federally Recognized Tribes and Alaska Native Corporations Recommendations*

ACTION B-3.1:

Establish an Alaska/Federal Clean Energy Policy Force to develop, collaborate, and prioritize State energy, plan, goals, and rights to optimally advance renewable energy transmission lines on federal lands.

Background:
The State of Alaska has the highest disparity of power costs from one community or region to another. Some of America's most significant energy cost disparities exist between high-energy and low-cost energy communities within the Tongass and Chugach Forests lands controlled by the US Department of Agriculture (USDA) US Forest Service (USFS). A key factor between a high-cost and low-cost National Forest community is access to regional hydropower and associated transmission lines built with economies of scale required to deliver lower-cost hydropower energy sources. Currently, there is limited or no State input or consultive rights provided by the State of Alaska to affect the federal policies of the federal government in a collaborative and constructive dialogue that lowers the cost of energy for Alaskans and reduces emissions and other national goals of energy security and lessening dependence on fossil fuels.

RS 2477 (Revised Statute 2477) refers to a provision in the Mining Act of 1866, which allowed for the construction of highways across public lands not reserved for public uses. In simple terms, RS 2477 granted a "right-of-way" to build roadways and transmission lines over public land that provide access to renewable energy project areas.
Section 4407 of Public Law 109-59 (Section 4407) of a 2005 federal transportation funding bill refers to a Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). SAFETEA-LU was a bill sponsored by the late Congressman Don Young and was signed into law by President George W. Bush in August 2005. Section 4407 provides as follows: Notwithstanding any other provision of law, the reciprocal rights-of-way and easements identified on the map numbered 92337 and dated June 15, 2005, were enacted into law. Section 4407 Rights of Way provides roadways and transmission line corridors over the Tongass National Forest, instrumental for the State of Alaska's interests in providing access to renewable energy project areas and transmission lines. However, Tongass Forest Land Management Plans, Land Use Designations (LUD), and other federal regulations are at odds with the State exercising its rights.

Value Proposition: The development of state policies and goals to negotiate and execute with federal agencies for developing cost-effective renewable energy and transmission lines on federal lands lowers energy costs for Alaskans while assisting federal agencies in meeting national clean energy goals through mutual State-Federal cooperation, respect, and understanding.

Benefits:
The development of state policies and goals to negotiate and execute with federal agencies for developing cost-effective renewable energy and transmission lines on federal lands lowers energy costs for Alaskans while assisting federal agencies in meeting national clean energy goals through mutual State-Federal cooperation, respect, and understanding.

How Do We Get There?
Establish an Alaska-Federal Renewable Energy Working Group between the Governor's Office, Attorney General, Alaska Energy Authority, Alaska Department Commissioners, the USDA Forest Service and US Dept. of Interior (DOI) landholding agencies, and the US Department of Energy (DOE) and USDA Rural Utilities Services officials that promote energy development in Alaska to find common ground to develop renewable energy projects and related transmission lines to collaboratively and successfully open up Alaska federal lands for Alaska renewable energy development and transmission execution.

Strategy B-3:*State of Alaska Coordination with Federal Agencies, State and Federally Recognized Tribes and Alaska Native Corporations Recommendations*

ACTION B-3.1 (CONT.):

Establish an Alaska/Federal Clean Energy Policy Force to develop, collaborate, and prioritize State energy, plan, goals, and rights to optimally advance renewable energy transmission lines on federal lands.

Utilize the creation of an Alaskan-Federal Renewable Energy working group to Develop, Draft, and Execute mutually approved agreements between the authority of the Governor and the Executive Orders of the President of the United States and initiate binding Congressional legislation and Alaska legislation as needed for asserting the State of Alaska consultive and input rights on the development of federal lands for the purpose of renewable energy development and transmission siting authorities. This collaboration aims to ensure Alaska's consultative rights in renewable energy projects on federal lands and to shape necessary legislation.

Seek, negotiate, and obtain through agreement or through initiated federal legislation State primacy on existing and potentially new renewable energy Power Site Classification Sites (PSC) found on federal lands in Alaska identified in established Bureau of Land Management Public Land Orders and aimed for greater access to these PSC for development.

https://archive.org/details/powersiteclassif02geol/mode/2up

Seek, negotiate, and obtain through agreement or through initiated federal legislation a Renewable Energy Land Use Designation (RELUD) and Transmission Line Land Use Designation(TLUD) that overlay and have priority over all other Land Use Designations in the Tongass and Chugach Forest Land Use Management Plans.

Negotiate with federal agencies and obtain State Primacy over RS 2477. A component of actions to accomplish through an Alaska-Federal Renewable Energy working group is to gain State primacy and control all Alaska RS 2477 Rights of Way located on or near federal lands to facilitate access to and from renewable energy sources for development. Seek to have State primacy on all RS 2477 trails and roadways in Alaska located on federal lands to facilitate access to and from renewable energy sites for development.

https://www.blm.gov/sites/default/files/docs/2022-05/PDF_AK_State_of_Alaska_RS2477_BLM_AK_RAC_May_2022_James_H_Walker.pdf

Enlist support from the Alaska Congressional Delegation to introduce legislation to have Alaska and other affected States gain state primacy over RS 2477 Rights of Way located in their respective states.

A component of actions to accomplish through an Alaska-Federal Renewable Energy working group is to gain State authority over Section 4407 easements in Southeast Alaska or near federal lands to facilitate access to and from renewable energy sources for development. These easements were created pursuant to a land exchange ratified by Congress in Section 4407 of a 2005 federal transportation funding bill.

https://dot.alaska.gov/sereg/projects/sitka_katlianbayroad/assets/Section_4407_Easement.pdf

Implementation Timeline:
This action item has a blend of Immediate and short-term tasks for implementation.

Expected Results:
The State of Alaska, with careful and planned execution, can Advance and Promote Alaska's renewable energy development with cooperation and support from the federal government to achieve national purposes while reducing the energy cost of Alaskans. The expected results will lower Alaska's energy costs and reduce the dependency on imported fuels, using local Alaska land and energy resources.

Strategy B-3:*State of Alaska Coordination with Federal Agencies, State and Federally Recognized Tribes and Alaska Native Corporations Recommendations*

ACTION B-3.2:

The State of Alaska partners & collaborates with the State of Alaska and Federally recognized Alaska Tribes and federal agencies to develop mutually beneficial Energy Development and Transmission/Distribution to advance the State Energy Plan to lower the cost of energy.

Background:
Coastal Alaska communities are keen on lowering their energy, heating, and transportation costs through collaboration of State, Tribal, and federal resources. State and Federally Recognized Tribes actively explore energy solutions and are supported in tribal energy endeavors by federal resources. Tribal goals align with the broader Alaska state mission of making energy more affordable for all residents. Furthermore, many recognized tribes have designated staff working specifically on energy projects, often in collaboration with federal entities. By working together, the State of Alaska, Recognized Tribes, and our shared Alaskan communities can assist the wider Alaskan population by cooperatively developing and sharing efficient energy solutions. This joint effort can enhance the creation, sharing, and use of energy across the State. Additionally, recent legislative changes in the Inflation Reduction Act actively seek to fund energy developments with tribal entities, which could provide lower-cost energy benefits and local energy resilience in many areas of Alaska.

Federal agencies, specifically the US Department of Energy (DOE) and the US Department of Agriculture, Rural Utilities Services (USDA-RUS) have rural and tribal-centric programs that can advance the State of Alaska's goals to develop energy infrastructure and reduce energy costs for Alaskans.

Benefits:
The State of Alaska, specific federal agencies, and state/federally recognized tribes have mutually shared goals to provide low-cost heating, electricity, and transportation to Alaskans and Alaskan communities. By identifying and sharing information, plans, and initiatives and then establishing a framework to cohesively advance energy generation, transmission, distribution, storage, and heating solutions, the State of Alaska, federal agencies, and Alaska Tribes can optimize resources and benefits to lower the cost of energy and increase energy security for Alaskans.

How Do We Get There?
Establish a working group of regional tribes interested in or working on energy solutions to lower the cost of energy with State of Alaska officials, Alaska Energy Authority (AEA), the Governor's Office, and the Denali Commission. The working group would identify areas of mutual assistance to advance locally sustainable energy developments and transmission projects by strategically and tactically optimizing federal and tribal funds to achieve mutual energy goals of lower-cost and self-sustaining energy systems.

Identify and attract federal tribal energy program participation, technical assistance, and financing to work with state agencies to streamline permitting, regulatory processing, and funding to advance projects and transmission to lower energy costs and provide community energy security.

The US government has specific energy assistance programs for tribal entities to partner with the State of Alaska, Communities, and public/private developers of generation and transmission that work together with a unity of purpose and effort to assist in lowering the cost of energy for Alaskans.

If deemed viable and valuable, create a Fed State Navigator role or duties assigned to an existing position to assist rural and tribal entities in navigating the State permitting processes to develop and construct local renewable energy and transmission projects using tribal and federal funding with State assistance.

Strategy B-3:*State of Alaska Coordination with Federal Agencies, State and Federally Recognized Tribes and Alaska Native Corporations Recommendations*

ACTION B-3.2 (CONT.):

State of Alaska partners and collaborates with Federally recognized Alaska Tribes and federal agencies to develop mutually beneficial Energy Development and Transmission/Distribution to advance the State Energy Plan to lower the cost of energy.

Implementation Timeline:
This action item has a blend of Immediate and short-term tasks for implementation.

Expected Results:
This Action item, with its implementation steps, offers a roadmap to gain common ground, synergies, and practical outcomes for Alaska communities with overlapping interests of federally recognized tribes to achieve the mutually beneficial goal of lowering the cost of energy for Alaskans.

STRATEGY B-4: ALASKA HYDROPOWER GENERATION RECOMMENDATIONS

ACTION B-4.1:

Foster, Support, and Assist Hydropower development and transmission in Alaska to lower energy costs, provide energy security, and spur economic growth, job creation, and prosperity for Alaska.

Background:
The foundation of Alaska's most cost-effective energy lies in its legacy hydropower infrastructure, some of which dates back decades or even a century. With proper maintenance, these hydropower systems have a life expectancy of over 100 years. Once the hydropower project's initial debts are settled, they yield consistent, renewable, and lowest-cost power, benefiting multiple generations of Alaskans and commerce today and well into the future.

Historically, Alaska's economic vitality is due directly to its hydropower assets. Whether the small local hydropower systems that powered early mining and fishing sectors or the subsidized projects like Bradley Lake and Snettisham Hydro and the hydropower investments from the era of the Four Dam Pool, these assets have consistently provided low-cost energy, driving Alaska's prosperity.

Both in Alaska and across the U.S., the National Hydropower industry is expanding to include river hydrokinetics, tidal, and marine power projects as hydropower projects. As these technologies evolve, Alaska's extensive coastline and lengthy rivers — greater than all other states combined — position it to capitalize on these innovations and benefit from these advancements to provide energy security and lower the energy cost for Alaska. Today, hydropower accounts for 29% of Alaska's electricity. This reliable power source underpins vital sectors of the Alaskan economy: mining, fisheries, military, and tourism, ensuring energy security and economic stability for the state.

Benefits:
Hydropower in Alaska is not just an energy source; it's our Alaska energy DNA. Historically, hydropower has consistently delivered the state's most affordable power. By investing in hydroelectric infrastructure, we're not just tapping into a proven energy solution but securing Alaska's energy future. This investment strategy, rooted in a track record over a century, offers unmatched cost-effectiveness in the long run and past most investment cycles. While the initial outlay is significant, the long lifecycle of hydropower — exceeding 100 years — ensures that Alaska is planting seeds for today's needs and also reaping benefits for future generations with sustainable, clean energy. Investing in hydropower is our Alaska commitment to Alaska's proven energy model, where hydropower assets exist for a brighter, more affordable, energy-secure future for Alaska.

How Do We Get There?
Evaluate and execute adaptive investment practices from the Bradley Lake and Four Dam Pool model and combine them with some of the prudent practices of BC Hydro to create a public-private State of Alaska corporation to develop, invest, own, and oversee operations of new hydropower facilities in Alaska.

Provide and fund AEA the authority to identify and invest in regional hydropower and hydropower transmission and distribution assets for the public benefit.

Encourage utilities to financially participate in ownership and long-term offtake arrangements to provide energy security and growth in service areas or to allow utilities to service new large industrial loads-mining and cruise industry shore power.

Combine federal tax incentives, grants, and loan programs to optimize lower-cost financing and equity costs to lower the cost of power now and over the life of the assets.

Establish a State of Alaska Power Fund to own and operate Alaska hydropower assets that can provide regional benefits.

STRATEGY B-4: ALASKA HYDROPOWER GENERATION RECOMMENDATIONS

ACTION B-4.1 (CONT.):

Foster, Support, and Assist Hydropower development and transmission in Alaska to lower energy costs, provide energy security, and spur economic growth, job creation, and prosperity for Alaska.

Establish State of Alaska administered and supervised investment mechanisms and equity ownership for utility, tribal, and local community investments, combining local equity with federal financing through existing or new federal programs.

Seek federal legislation to provide funding for a State of Alaska Power Fund to help Alaska provide energy security for Alaska military bases and installations for the benefit of Alaska support for Alaska-based military and Coast Guard operations for national security.

Identify, support, and fund to build local and regional hydropower to serve Alaska communities and multiple transmission interconnected communities at economies of scale, providing lower-cost power. Alaska Energy Authority (AEA) and Alaska Industrial Development and Export Authority (AIDEA) financially support through existing programs and investments any executable-ready hydropower project (permitted/licensed, designed, economically feasible) that will provide lower-cost electricity over the project's life.

Identify, seek, and support the construction of hydropower assets to export power to provide economies of scale for hydropower projects to lower the energy cost for Alaskans by selling export power to finance and economically enhance a hydropower project's economic viability.

Develop and support economically and with regulatory approval intertie connections and transmission corridors to strategically place transmission to interconnect current and future transmission to provide transmission corridors to known and undeveloped hydropower locations.

Establish a State/Federal Power board, through Congressional legislation, to cooperatively have the Federal government land owners actively assist the State of Alaska in developing hydropower assets on federal lands.

Review, refine, and amend Sec. 42.45.350. Licensing for water-power development projects and enacting state regulatory control over small hydropower development with Alaska interdepartmental coordination to support hydropower projects with abbreviated regulatory permitting.

Governors Office and AEA work with the Congressional delegation to craft legislation to ensure that FERC-exempt or state-licensed hydropower projects qualify for all eligible federal Production Tax Credits (PTC) and Investment Tax Credits (ITC).

The Governor's Office and AEA work with Alaska's Congressional delegation to craft and support legislation identifying hydropower as a renewable carbon-free energy source for all federal legislative, regulatory, taxation, incentive, and national security purposes.

AEA provides an option for Renewable Energy Credit (REC) participation through a statewide pool. This pooling approach aims to achieve economies of scale when selling RECs. By doing so, both state-owned and other hydropower projects can maximize the value of Alaska's hydropower RECs. The ultimate goal is to reduce the cost of electricity for Alaskans.

These action steps have statewide applicability for other regions of Alaska where critically important hydropower development assets exist.

STRATEGY B-4: ALASKA HYDROPOWER GENERATION RECOMMENDATIONS

ACTION B-4.1 (CONT.):

Foster, Support, and Assist Hydropower development and transmission in Alaska to lower energy costs, provide energy security, and spur economic growth, job creation, and prosperity for Alaska.

Implementation Timeline:
This action item has a blend of Immediate for execution-ready hydropower and short-term, mid-term, and long-term tasks for hydropower in earlier analysis and development stages.

Expected Results:
The State of Alaska can take an active, willful, and calculated role in lowering the energy cost for Alaskans, energy security, and economic prosperity by effectively guiding hydropower development policy and investments in hydropower assets and related transmission infrastructure safeguarding Alaska's energy future with an Alaskan tried and proven energy model.

This structured execution list offers a clear roadmap of the proposed actions to initiate and promote hydropower development to lower the energy cost for Alaskans, provide energy security, and increase the diversification of Alaska's energy-producing assets.

STRATEGY C-2: INFRASTRUCTURE INVESTMENT

ACTION C-2.5:

Fund and Construct Opportunities to Connect Rural Communities through Transmission Lines and Other Shared Energy Projects.

Background:
Due to the remote nature of many Alaskan communities, many rural Alaskan communities must generate their own power for electricity and heat. Rural power generation in many cases is from diesel fueled generators. This vastly increases the cost of power in rural Alaska. Infrastructure investments that may help lower the cost for some rural Alaskan villages are building transmission lines from the Railbelt utility system to local villages, between local villages, or between local villages and private or public sector anchor tenants to grow economies of scale. This would allow villages connected to other power grids to enjoy power costs comparable to Railbelt residents.

Benefits:
Alaskans, Alaskan communities, utilities, and independent power producers work together or independently to finance, construct, and maintain transmission infrastructure tied to the Railbelt or other grids to ensure remote/rural Alaskan communities enjoy similar cost of power as Railbelt residents.

How Do We Get There?
Strategies and Tactical Steps for Advancing Action

- Identify the appropriate organization(s) that will oversee the development and construction of the grid. Task 1 is to ensure that all impacted parties are onboard, and that the organization has appropriate authority.
- Coordination and cooperation between energy sources and requirements of an integrated grid.
- Consolidate the variety of interconnection proposals that have been performed to date and select those most technically feasible.
- Estimate greenhouse gas reductions, fuel savings, and other direct savings.
- Assemble the team to recommend approaches to accomplish technically feasible alternatives i.e., segmented versus consolidated grid system.
- Investigate alternative financing options, including direct state investment, allocation of PCE funds, federal & state grants, subsidized loans, and P3 opportunities.
- Identify priorities that bring maximum and immediate return. The savings that can be applied to the balance of the project.
- Evaluate opportunities to co-develop energy infrastructure with transportation and other infrastructure developments

Implementation Timeline:
- Within 1 year have the organization identified and established.
- Within 2 years:
  - Have a technically feasible alternative identified.
  - Implement design and engineering.
  - Identify the most likely funding sources and environmental requirements.
- By year 3:
  - Obtain necessary permits.
  - Develop schedule for construction activities (define scope).
  - Procure qualified contractors.

STRATEGY C-2: INFRASTRUCTURE INVESTMENT

ACTION C-2.5 (CONT.):

Fund and Construct Opportunities to Connect Rural Communities through Transmission Lines and Other Shared Energy Projects.

- By year 5:
  - Authorize construction.
  - Establish operating guidelines and responsibilities.

Expected Results:

- Fuel cost savings from reduced diesel dependency.
- Greenhouse gas reductions.
- Reliability and resiliency benefits.
- Spur local economic development and employment.
- Expanded opportunities for distributed renewable resources.
- Reduced dependency on PCE (could funds be reallocated i.e., M&O).
- Measure and demonstrate the project as a template for other regions

STRATEGY C-3: LOWER OPERATIONAL COSTS

ACTION C-3.4:

Explore opportunities to modernize rural grids to improve operating efficiency and support maintenance and operations of energy infrastructure in rural/remote locations to reduce the cost and increase the reliability of rural energy systems.

Background:
Due to the remote nature of many Alaskan communities, there is potential for loss of power (electric/heat) without awareness outside of the community. Power loss may also reduce or prevent the ability to communicate outside of the community, threatening public health and life safety during temperature or climate extremes. Power plant automation, remote sensing equipment or use of growing drone technology, data management and artificial intelligence, and other emerging technologies provide the ability to automatically or remotely to avoid power system failures or outages, and alert power providers with notice of a failure to focus and accelerate recovery and restoration efforts.

Benefits:
Alaskans, Alaskan communities, utilities, and independent power producers work together or independently to finance, execute, and operate plant automation, remote sensing technology, unmanned aerial systems, data-driven preventative maintenance programs and other grid modernization enhancements to ensure remote/rural Alaskan communities are able to avoid or recover from power failures as expeditiously as possible, while improving reliability and reducing operating costs.

How Do We Get There?
- Enhance communications infrastructure and reliability. For example, ensure all new power conductors incorporate a fiber optic data and communications line.
- Enhance manually operated power plants with automation and remote monitoring and control operations including necessary communications infrastructure upgrades i.e. fiber optic and other platforms. Prioritize critical functions including remote black start, emergency stop, economic dispatch, video monitoring, and fuel system monitoring capabilities.
- Incorporate automation, remote monitoring and control, computer based data collection and storage predictive and preventative maintenance platforms, and communications upgrades into all new or replacement power plant projects.

Implementation Timeline:
- Within 1 year identify pilot communities and develop a modernization framework for those communities. Identify currently automated rural communities and capture lessons learned and best practices for guidance and knowledge-sharing to advise and streamline pilot deployments.
- Year 2 – Perform feasibility assessments, identify and select pilot communities or energy systems for modernization. Aggregate funding sources that can be allocated to selected projects to be undertaken by the producers and project partners. Identify adjacent opportunities for infrastructure enhancements to share the costs and benefits of grid modernization (automation of community water and sewer treatment facilities, for example).
- Years 3-5 deploy grid modernization enhancements to pilot community/communities and document and refine the process to serve as a template for additional communities. Each implementation should be continuous from inception to completion.

Expected Results:
- Improved grid reliability.
- Faster response and restoration times for outages.
- Improved operating efficiencies.
- Improved operations and maintenance of rural system to reduce preventable or catastrophic failures.
- Improved communications platforms that can be co-purposed to meet other community needs
- Provide opportunities to cost-share for other community infrastructure modernization initiatives.

STRATEGY E-1: STRENGTHEN STATE-FEDERAL COORDINATION AND INVESTMENT

ACTION E-1.1:

Establish a state/federal working group that identifies and works toward 1) improved access on federal lands, 2) establishes funding to accelerate a local, reliable, and affordable energy transition, 3) and enables leveraging investment opportunities between state and federal programs.

Background:
The State of Alaska has the highest disparity of power costs from one community or region to another. Some of America's highest-cost energy communities have significant barriers in the form of federal lands, which comprise more than 60% of the state. Additionally, Alaska has comparatively underdeveloped transmission lines compared to other States and territories, and this deficiency negatively impacts renewable energy development required to lower energy costs. Federal land use policy comes with significant hurdles and a limited ability to effect widespread access or change.

Benefits:
A coordinated and targeted effort by state and federal agencies that focuses on improving access and removing barriers is critical to lowering the cost of energy in Alaska, even as it increases the potential to meet federal clean energy goals.

How Do We Get There?

1) Develop an implementation strategy for federal energy funding opportunities, including to align with State-level investments.

- AEA, other state agencies, and local and tribal governments, are responding to a diverse range of federal opportunities, as well as implementing awarded projects. This effort requires matching funds and increased capacity, as well as continued awareness of opportunities ahead. The State should increase its ability to maximize the benefit from these activities by 1) identifying relevant opportunities for Alaska, 2) coordinating competitive responses to discretionary grants, 3) identifying available, leveraged, and/or providing sufficient matching funds for response, 4) increasing overall capacity to respond to grant opportunities, including to track and bundle implementation, and 5) apply State-level funds where gaps occur.

2) Establish a clean energy and transmission line land use designation on state and federal lands.

- Alaska's land ownership make-up is notorious for complexity, with little privately owned land and more than two-thirds of the State in federal hands. Federal lands access is critical to future clean energy development. The State of Alaska has rights of way established under RS 2477 and S 4407 that would establish and enable clean energy development and transmission in Alaska. The Task Force recommends that federal land managers establish renewable energy and transmission LUD overlays that prioritize clean energy and transmission development to ensure prioritization of these land use designations in cooperation with federal land managing agencies and the Congressional Delegation.

3) Establish a state and/or federal Alaska Clean Energy and Transmission Line Fund or an Alaska Energy Transition Fund.

- Overcoming the tyranny of distance in a State that experiences the lowest population density in the nation means that economies of scale to achieve affordable project delivery must be overcome by public investment. The federal government can help the state address this with a dedicated funding mechanism that helps offset those inherent disadvantages. This could come as formula funding instead of competitive funding, and the opportunity to pool funds between state, local, and tribal governments would be additionally beneficial. Ultimately, this mechanism can provide a more efficient way to increase investment into clean energy and transmission projects that have the potential to dramatically lower the cost of energy in Alaska communities.

STRATEGY E-1: STRENGTHEN STATE-FEDERAL COORDINATION AND INVESTMENT

ACTION E-1.1 (CONT.):

Establish a state/federal working group that identifies and works toward 1) improved access on federal lands, 2) establishes funding to accelerate a local, reliable, and affordable energy transition, 3) and enables leveraging investment opportunities between state and federal programs.

4) Ensure that criteria for state and federal project investments are weighted toward affordability goals, among other priorities consistent with the Task Force.

- Federal priorities are currently focused on beneficial electrification and clean energy goals, which in Alaska's circumstance may not lead to addressing greatest need or result in lower-cost energy. The State can continue to advocate for federal programs to respond more directly to the needs of Alaska communities and to work with the State to achieve affordable energy, even as together state and federal agencies can identify local and reliable transitions.

5) Optimize utilization of DOE LPO Title 17 Clean Energy Financing Program and/or Tribal Energy Loan Guarantee Program, USDA, Rural Utility Service programs and other applicable federal programs.

- There are multiple federal programs that could help to increase affordability for Alaska energy projects. Similar to the State's approach to grant identification and pursuit, these programs provide financing that may be part of a solution for project delivery. Technical assistance and navigation through these systems would increase utilization, and should be supported by State-level implementation.

6.) Increase the capacity for and streamlining of regulatory and permitting action within state agencies and at the federal level.

- The State of Alaska has multiple departments with diverse missions and responsibilities. Developing energy projects in Alaska requires developer coordination with competing agencies with differing priorities and willingness to assist a project developer. This lack of unity of effort can lead to uncoordinated permitting and diminishes the ability to execute energy projects and transmission between differing state agencies. There is a need for a navigation coordinator and assistance for Alaska communities and Alaska renewable energy developers to coordinate among the differing State Agency requirements. The State should establish an AEA-sponsored in-state working group/ oversight body between the Governor's Office, AEA, and State agencies to find common ground and purpose to streamline renewable energy, transmission, and energy project interconnection permitting, regulations, and State of Alaska authorizations. The focus is to "promote" and develop clean and affordable energy projects and related transmission lines to accelerate permit processing.

Expected Results:

The increased capacity of the state to negotiate and execute priorities with willing federal agencies for developing cost-effective clean energy, transmission lines on federal lands, with dedicated funding in place to bring Alaska parity with the rest of the nation, will lower energy costs for Alaskans while assisting federal agencies in meeting national clean energy goals. This process will increase knowledge of available funding and implementation support for energy projects in Alaska. This action aligns with and should leverage current federal investment through IIJA and IRA.

STRATEGY E-2: REDUCE THE BARRIERS TO PRIVATE SECTOR INVESTMENTS

ACTION E-2.1:

Establish a strategic approach to policy, tax, and program development that stimulates and incentivizes private sector activity that leads to lower cost, local, and reliable energy.

Background:
Federal and state investment is insufficient to address the scale necessary to effect widespread and meaningful transition toward lower-cost and –carbon energy. At the same time, removing barriers or reducing the burdens associated with private sector investments has the potential to increase Alaska's ability to establish partnerships, and leverage private capital in the public interest. Ultimately, what the State has most control of is its own policy, regulatory, and tax systems. The State's capacity to contribute to lowering the cost of energy for Alaskans is immense, and intensity of effort is required to fully assess current activity and the potential need for new laws and practices that will incentivize change.

Benefits:
Initiating a series of statutory changes and encouraging quicker adoption by communities and use by utilities and others will unlock private sector investment. Offsetting upfront costs and increasing the utilization of low-interest public capital will strengthen project economics while including strong public benefit criteria. Finally, this process envisions increasing the overall economy of scale, which will contribute to reducing barriers.

How Do We Get There?
1. Improve and further implement Commercial Property Assessed Clean Energy and Resilience (C-PACER) programs and evaluate the future adoption of a Residential R-PACER program.

- The goal of C-PACER is to increase the tools available for clean energy adoption and now resilience improvements in commercial development. These programs are adopted at the local level, and to date only Anchorage has implemented a program. The Task Force encourages increased outreach to other local governments to assist in the establishment and implementation of C-PACER programs, accelerating the potential benefits of the program. Where needed, the State can introduce additional mechanisms to lower the burden of implementation, including through centralized support or technical assistance. A similar program for residential development would have benefits, potentially, and the State should introduce R-PACER programs as options for communities and provide corresponding support for implementation.

2. Establish an open access transmission integration tariff and reduction or elimination of interconnection and/or wheeling tariffs.

- Barriers to integrating clean energy into existing generation or transmission should be removed, including through standardizing integration tariffs. The RCA can identify current interconnection and wheeling tariffs and work to establish a system of open access.

3. Adopt a Clean Energy Standard with incentives to facilitate reaching diversification goals. *

- The State can address its energy diversification goals by adopting a Clean Energy Standard that includes incentives for adoption. Avoiding "sticks" that ultimately end up being passed on to ratepayers, an incentive-based approach will lead to stronger mobilization of private sector capital investment and utility adoption.

4. Implement low-interest loan program (concessionary capital, like Power Project Loan Fund) that facilitates affordable energy development and infrastructure improvements.

- New generation projects face obstacles with securing competitive debt terms for projects in Alaska. Debt interest rate and term (duration) significantly affect project economics and ultimately the energy price paid by consumers. Providing a reliable debt source for generation projects that diversify power generation will increase the number of successful projects, reduce the energy cost to consumers, and ensure that returns maintain administration and sustainability of the program. Given the funding scale of these projects, it's Important that this capital support from the state is structured as a loan and not a grant. The State can achieve this by augmenting the Power Project

STRATEGY E-2: REDUCE THE BARRIERS TO PRIVATE SECTOR INVESTMENTS

ACTION E-2.1 (CONT.):

Establish a strategic approach to policy, tax, and program development that stimulates and incentivizes private sector activity that leads to lower cost, local, and reliable energy.

Fund or implementing new or similar, with the goal being access to low-cost capital available over a longer-term duration. The State may choose to implement a loan forgiveness portfolio based on other energy goals, like clean energy or reliability.

5. Conduct pre-development permitting, surveying, engineering, and/or environmental within principal energy zones.

- A large part of project development occurs prior to construction, and the longer it takes to conduct pre-development work, the more expensive a project is. The State and federal government, as well as others, have a role in helping to reduce these costs. Agencies can do this by streamlining process and making more efficient the ability for developers to move from proposal to construction. In some areas of the state, prioritization of generation or transmission can result in State investment into taking on some of the pre-development activities, including to complete processes like surveying or environmental studies ahead of time, or to assist with permitting and overcoming regulatory hurdles. This is complementary and additive to the program at DNR, in the Office of Project Management and Permitting, whose responsibilities could be extended to energy generation and transmission at varying scales.

6. Conduct an evaluation of state government's capacity to increase incentive programs or make investments that lead to lower cost energy.

- The State has multiple programmatic, operational, and capital investment programs that contribute to current energy investments. The State should conduct an evaluation of these for total currently utilized and the potential for delivering more efficiently or differently to maximize reduced barriers to investment that result in lower energy costs. This evaluation should consider the State's debt capacity, available financing tools, ability to match federal grant awards, and an allocation of available State capital budgets. This process should result in the ability to track and benchmark state energy-related expenses, including to assess the relative benefit from state incentive programs. These can be evaluated based on whether they result in lower cost energy, and not necessarily from a revenue perspective. This evaluation should consider the ability of the State government to forego revenue as part of an incentive program, such as through an income or property tax exemption or credit, which should advance the state towards its long-term goal of significantly diversifying power generation with an emphasis on local, reliable, and affordable energy.

7. Draft and Enact Legislation to eliminate property tax and exempt property taxes for new generation, transmission, and distribution assets for the dual purpose of attracting private investment in energy development to deliver and lower the energy cost for Alaskans.

- Such tax incentives make Alaska a competitive and attractive destination for private capital in an intensely competitive investment environment. Investors are more inclined to invest in a State where their capital can yield better returns without heavy tax implications. Similarly, taxes must be borne by the Alaska electrical customer, and taxes on energy infrastructure are counterproductive to lower the energy cost for Alaskans. The State should conduct a review of and analyze other state property and sales tax exemptions and then create the most effective tax credit or deduction, or reimbursement program, to achieve the goal of local, affordable, and reliable power. The RCA should have mechanisms in place to determine that credits result in lower cost energy for ratepayers, and are appropriately applied. Implementing this State-level system of credits or deductions may be particularly important for multi-jurisdictional projects.

STRATEGY E-3: : MAINTAIN RESIDENTIAL SUBSIDY FOCUSED ON EQUITY, WHILE REDUCING NEED ACROSS COMMUNITIES

ACTION E-3.1:

Continue the commitment by the State to ensure residents have access to Power Cost Equalization (PCE) funds for as long as lower costs are not achieved, as the State actively works to 1) consider alternative mechanisms, 2) strategically deploy PCE funds to advance low-cost energy solutions, and 3) identify opportunities to expand the ability of PCE to reduce costs across sectors within communities.

Background:
The value of PCE cannot be overstated – it has proven to be a lifeline to Alaskans who bear the brunt of high costs. This equitable distribution of State funding, relative to and based on project investment in some parts of the state, has lowered costs in communities where otherwise more residents may have chosen outmigration. However, PCE has not equalized costs in any way, and it remains true that this high-cost burden falls on some Alaskans and not others. At the same time, the overall goals of the state can encompass reducing the need for this subsidy by actually lowering costs in communities.

Benefits:
Initiating a series of statutory changes and encouraging quicker adoption by communities and use by utilities and others will unlock private sector investment. Offsetting upfront costs and increasing the utilization of low-interest public capital will strengthen project economics while including strong public benefit criteria. Finally, this process envisions increasing the overall economy of scale, which will contribute to reducing barriers.

Working toward a flatter rate across Alaska improves the mobility of residents, increased economic opportunity, and overall improved quality of life for Alaskans.

How Do We Get There?
1. Ensure that PCE funds are available at the right scale over the correct time period.
- There should be a clear commitment from the State that the role of and intent behind the Power Cost Equalization Fund should never be diminished. To be clear, the historic and long-standing goal to alleviate the energy burden of high-cost communities to the extent that PCE is designed for remains a priority for the State. However, the State should develop robust models for the future of the Fund that include scenarios analysis of what will be needed over a sufficiently long-time horizon, similar to an actuarial analysis conducted for other long-term investments, such as the State pension system. This modeling will identify future need and how investments at the community level have the potential to reduce that need, and what targets should look like in the decades to come. The principle behind this is that the PCE Fund is not the goal; the goal is lowering the energy burden for Alaskans.

2. Implement a strategic approach to lowering costs according to highest use communities.
- A follow-on to 3.1, this action evaluates all current PCE communities based on a variety of factors, including current experienced costs, PCE contributions, population, and opportunity for projects that would reduce the cost of energy. Based on this evaluation, modeling would result in prioritization of communities where State investment would 1) lower the cost of energy below the current PCE threshold – achieving reduction of energy burden, and 2) result in a long-term savings to PCE. This latter is important if PCE funds were to be considered for these kinds of investments, but clearly the process would have to be evaluated as a whole for feasibility. The State could similarly mobilize other state or federal investments to achieve this same goal, and maximizing PCE funds for future use, as determined to be needed based on system modeling.

3. Increase the use of PCE funds available to community facilities, ensuring the full utilization of the current allocation.
- Under PCE, currently, community facilities are eligible for an allocation of subsidy. However, in some communities the allocation isn't fully utilized. A study of these gaps should result in identified additional available resources that could be available for debt service, grid resilience, utility maintenance and operations, or other types of investments that lower costs for ratepayers.

STRATEGY E-3: : MAINTAIN RESIDENTIAL SUBSIDY FOCUSED ON EQUITY, WHILE REDUCING NEED ACROSS COMMUNITIES

ACTION E-3.1: (CONT.)

Continue the commitment by the State to ensure residents have access to Power Cost Equalization (PCE) funds for as long as lower costs are not achieved, as the State actively works to 1) consider alternative mechanisms, 2) strategically deploy PCE funds to advance low-cost energy solutions, and 3) identify opportunities to expand the ability of PCE to reduce costs across sectors within communities.

4. Evaluate the impact of changes in statute that create incentives for – or remove disincentives to – local investment that leads to lowering the cost of energy for residents to the maximum extent possible.

- Changes to the PCE program have the potential to lead to unintended consequences. All opportunities that propose changes to PCE should be evaluated for the multiple levels of impact that might occur. Such a review should include an economic analysis of the potential to maximize benefits to residents, including and especially as it relates to lowering the cost of energy in a community. At the same time, changes would need to consider sustainability of the PCE endowment, other uses of those funds, and ability of the program to meet the needs as intended by statute.

5. Consider the development of a postage stamp rate alternative, where all Alaskans pay the same rate.

- Some would argue that PCE has not been as effective as it could have been, and even lowering the cost of energy in PCE eligible communities has not truly brought parity to the State. This variation and remaining high-cost results in continued energy burden for non-residential customers, high costs of goods and services, higher costs for doing business, and higher costs of living overall. A potential solution that would have to be evaluated further is to implement a postage stamp rate instead. The basic model for this is that every Alaskan would pay the same rate, assumingly established by the RCA, based on the pooling of all utility rates. This means that for many Alaskans, rates would go up, for many communities, rates would go down, and further analysis would have to be conducted for distributional impact. Such an approach really focuses on the ability for investments that lower the cost of energy anywhere in the state to benefit all Alaskans. Guardrails would have to be in place to avoid the risks of additional shared liability, too.

STRATEGY E-4: : IMPROVE THE ECONOMICS OF PROJECT DEVELOPMENT

ACTION E-4.1:
Create a multi-pronged approach to reduce risk to utilities and project proponents, increase the availability of financing mechanisms, and encourage ancillary investments that will benefit the industry and economies of communities.

Background:
Alaska will always be a high-cost state, defined by the tyranny of geography, time, and distance. Access to markets, and at the tail-end of a global supply chain, there are clear competitive disadvantages within which utilities and project developers operate, even as ratepayers (or the State) bear the cost. There are ways, however, to lower the costs of project development, and state action can facilitate this.

Benefit:
Affordability rests on CAPEX and OPEX, and both have avoidable and unavoidable layered costs. A strategic state approach can begin peeling away or mitigating avoidable costs to improve the economics of project development, and ultimately save ratepayers money.

How Do We Get There?
1.Establish a Green Bank for financing of community scale energy efficiency projects.

- A Green Bank increases the ability of the State to receive private and public funding, manage the fund and arrange affordable financing for defined sustainable energy developments to suit Alaska's unique energy needs, particularly with regard to addressing urban and rural energy requirements. This program would be established to make loans, provide credit enhancement structures, purchase loans, provide development funding and other forms of financing for sustainable energy development in Alaska's residential, commercial, and industrial market sectors. It would make capital more accessible to borrowers for clean energy projects and incentivize co-investment in Alaska's emerging clean energy sector between the public sector, Alaska's financial sector, and private investors.

2.Increase the ability of the State to encourage efficiency of sunk costs and investments, while implementing financial tools (arbitrage, bonds, etc.) that facilitate decommissioning high-cost utilities and aging plant securitization.

- The ability of utilities to invest in new clean energy or more energy efficient projects is limited by costs they've already incurred in existing generation and transmission facilities. These "sunk" costs are liabilities that are difficult to overcome if a utility were then to consider a new investment, limiting its access to new capital. The State should implement a program of technical assistance and analysis that increases the ability for utilities to leverage potential financial tools to assist with decommissioning or securitizing aging power plants. AEA can implement this process through its current powerhouse evaluation, helping to determine high-potential assets that would benefit from technical assistance. This could be accomplished in cooperation with AIDEA and AHFC, as well as with the Municipal Bond Bank.

3.Establish an opportunity for pooling of RECs for system optimization and improving economy of scale, including through something like a Clean Energy Standard.

- A renewable energy certificate (REC) is a tradeable, market-based instrument that represents the legal property rights to the "renewable-ness"—or all non-power attributes—of renewable electricity generation. A REC can be sold separately from the actual electricity (kilowatt-hour, or kWh). The REC owner has exclusive rights to make claims about "using" or "being powered with" the renewable electricity associated with that REC. A REC is issued for every megawatt-hour (MWh) of electricity generated and delivered to the electric grid from a renewable energy resource. The owner of the RECs associated with the renewable energy project's electricity output can sell these RECs to another party. In doing so, they forfeit the ability to make any claims about "using" renewable energy, but generate a new revenue stream. The revenue is a function of the system's

ACTION E-4.1: (CONT.)

Create a multi-pronged approach to reduce risk to utilities and project proponents, increase the availability of financing mechanisms, and encourage ancillary investments that will benefit the industry and economies of communities.

kWh output and the market price of RECs. The pooling of credits allows for the ability to access higher levels of capital at more competitive prices. REC arbitrage may be a feature of such pooling, and simply refers to the near-simultaneous buying and selling of commodities in different markets in order to take advantage of differing prices for the same or similar assets.

4. Anticipate and plan for strategic demand increases, or pooled asset investments, including through project bundling and beneficial electrification that augment the role of anchor customers and impact economies of scale.

- Traditionally, economy of scale challenges have been addressed through an anchor tenant model. There is increasingly an opportunity to include new models of development that include the access and utilization that comes with beneficial electrification. Essentially, increasing usage across a community, including through the electrification of heating, expands the market to act in the same was as an anchor tenant would. Increased power use should have the result of lowering the price per kWh, though additional analysis will be needed on a case-by-case basis. The rate and scale of current infrastructure investments may result in increased demand for energy, or facilitate delivery thereof. The State should have in place the capacity – through mechanisms such as Integrated Resource Planning – to anticipate future needs, including that of beneficial electrification, and increase its ability to support bundling project delivery, achieving efficiencies on the supply side.

5. Reestablish the Emerging Energy Technology Fund (EETF) in order to promote public-private investment in energy technology demonstration and deployment programs.

- The EETF was administered by AEA in consultation with a seven-member advisory committee, and was utilized to make grants to eligible applicants for demonstration of technologies that have a reasonable expectation to be commercially viable within five years and that are designed to: (i) test emerging energy technologies or methods of conserving energy; (ii) improve an existing energy technology; or (iii) deploy an existing technology that has not been demonstrated in the state. "Energy technology", as per AS 42.45.375(j)(2) was defined as "technology that promotes, enhances, or expands the diversity of available energy supply sources or means of transmission, increases energy efficiency, or reduces negative energy-related environmental effects; "energy technology" includes technology related to renewable sources of energy, conservation of energy, enabling technologies, efficient and effective use of hydrocarbons, and integrated energy systems." For every state dollar invested under the EETF, the projects received an additional $0.62 and $1.05 in federal and grantee match, respectively, for a total leverage factor of $1.67 for every state dollar expended. The State should reenact the EETF and make it available for clean energy demonstration projects that contribute to lowering the cost of energy in Alaska.

STRATEGY E-5: INCREASE STATE PROGRAMMATIC INVESTMENTS

ACTION E-5.1:
Evaluate and change current programmatic investments such that 1) these programs have sufficient capacity and competency to act effectively in support of lowering energy costs in Alaska, and 2) that the braiding of programmatic intent results in streamlining action and reducing CAPEX and OPEX costs.

Background:
Government programs may be developed to provide technical assistance or to serve as a resource to consumers, project proponents, and others. Program staff provide support and guidance as to how to utilize these tools. Programs may also try to provide direct services, such as improving energy efficiency, weatherization, community planning, or rate review and setting. Some programs are simply there to ensure compliance. Governments may spend significant resources on these programs. It is not clear that programs reduce the cost of energy, though they may have other benefits.

Benefit:
The ability of the state to achieve a moonshot goal requires a coordinated effort across agencies and through all programs that intersect with the goal. The state can consider every program through the lens of lowering energy costs for Alaskans, and refine its approaches to achieve that end

How Do We Get There?
1. Leverage and strengthen AEA's ability to execute their circuit rider program or provide other means to allow utilities to address the maintenance and operation needs of Alaska power systems by encouraging public, including public-private-partnerships for energy projects.

- One of the more significant costs of delivering energy to Alaskans is maintenance and operations. These day-to-day costs add up, especially for aging systems. The State should increase the ability for AEA to provide technical assistance through its Circuit Rider or similar program. At the same time, the State should consider implementation of a maintenance matching fund to provide additional layers of support for utilities who lack sufficient access to maintenance workers, including a second utility operator. Private sector delivery of energy projects, or public-private delivery of energy in communities, may increase the ability for financing of maintenance and operations.

2. Evaluate appropriate availability and impact of resources for weatherization, energy efficiency, and building retrofits.

- The State's programmatic investments into weatherization, energy efficiency, and building retrofits has the effect of reducing ratepayer costs, either through reducing their total bill or increasing the amount of power they can use at the same cost. At the same time, lowering energy usage may impact the utility's ability to keep rates low, if their rate evaluation determines a reduction to the economy of scale they are responding to. Essentially, these programs benefit homeowners but may increase costs for other ratepayers. The State can assist by conducting a community-level rate study that evaluates the impact of energy efficiency and conservation measures on rates, and determines a strategic approach to providing these types of programs.

3. Ensure adequate workforce training and skills development alongside job creation and quality goals of State.

- Expand and inventory available training and workforce development programs to identify gaps, increase capability and capacity building activities. A Sectoral Strategy and Career Pathways delivered through AWIB should result in increased training of an energy workforce able to meet the needs of clean energy and beneficial electrification. Models for apprenticeship could be effective, for instance, as well as leveraging current university and trades programs. Workforce development increases the availability of a capable workforce, which lowers operational costs and increases energy efficiency and utilization. The state and local governments – and employers across Alaska – are struggling with high vacancy rates and challenged by recruitment and retention. The State should implement a collaborative approach to workforce recruitment

ACTION E-5.1: (CONT.)

Evaluate and change current programmatic investments such that 1) these programs have sufficient capacity and competency to act effectively in support of lowering energy costs in Alaska, and 2) that the braiding of programmatic intent results in streamlining action and reducing CAPEX and OPEX costs.

in the energy sector, including to determine where investments – improved hiring bonuses, increases salary and benefits, prevailing wages, job quality, etc. – have the potential to attract sufficient and trained workers. Access to workforce is critical for reducing costs and delivering efficient and effective utility operations and project development.

4. Strengthen state and local procurement policies to provide preference for affordable and clean energy projects.
    - State and local procurement laws and policies affect how investment choices are made by the State and its political subdivisions. An evaluation of these policies should be conducted by the State and a collaborative effort should result in the identification of ways in which to align procurement with delivering affordable, local, and reliable energy projects. The State can offer an incentive program for local governments to improve their procurement practices, including to update these to meet the State's goals.

5. Implement additional incentives measures through standards, targets, and code development.
    - Consider the following tools for increasing available State incentives that might be accomplished through measures in statute or regulation, including:
    - Energy Efficiency Resource Standard: calls for a 10% reduction in forecasted electricity consumption within 10 years. Also require the RCA and other interested parties to develop a statewide estimate of all cost-effective electricity and natural gas savings and to develop efficiency savings and demand reduction targets for the next 10 years. This study must be updated every three years.
    - Energy Storage Target: Establish an energy storage procurement framework and a statewide energy storage target (in MW) by 2030, with rural and railbelt utilities each responsible for a portion of the total.
    - State Building Energy Code: Require that new state buildings and major renovations started after 2030 must be constructed to be zero net energy, while 50% of existing square footage must be in the process of achieving zero net energy by 2030. Additionally, new buildings or major renovations larger than 10,000 square feet must earn the "Silver" level of LEED certification and incorporate on-site renewable energy if economically feasible.
    - Alternative Fuels and Electric Vehicle Recharging is a property tax credit for individuals and corporations who install electric vehicle recharging or refueling on their property. As defined, electric vehicle recharging property includes all of the equipment needed to convey electric power from the grid or another power source to an onboard vehicle storage system. The credit for each property installation would be the lesser of $5,000 or 50% of the cost of the property.

STRATEGY F-1: IMPROVE ELECTRICAL TRANSMISSION SYSTEM

ACTION F-1.1:

IDENTIFY STATE MATCHING FUNDS NECESSARY FOR ALL FEDERAL FUNDS AVAILABLE FOR TRANSMISSION INFRASTRUCTURE.

Background:
Electric infrastructure is the bedrock of the state's economy and the operation of the daily lives of Alaskans. The Alaska legislature must leverage every federal dollar that offers the opportunity for reduced cost or improved reliability for Alaskans. The legislature should direct the appropriate state agencies to work with electric utilities statewide to determine where funding can best serve Alaskans through investment in electric transmission infrastructure.

Benefits:
Through robust state and federal investment in electric transmission systems, Alaska would strengthen its economic health.

How Do We Get There?
Governor and State Legislature provide funding for state matching funds for transmission infrastructure

Implementation Timeline:
2023-2035

Expected Results:
More reliable, more resilient, more accessible, and lower cost transmission systems in Alaska.

STRATEGY F-1: IMPROVE ELECTRICAL TRANSMISSION SYSTEM

ACTION F-1.2:
Clarify state statute AS 09.65.86 on Utility ROW wildfire liability

Background:
Alaska's electric utilities work hard to maintain their rights-of-way for transmission and distribution lines but have no control over vegetation that grows outside their rights-of-way. This creates a scenario in which trees or other vegetation outside the right-of-way -- but tall enough to fall into the right-of-way -- can cause damage, such as a wildfire.

Alaskans already pay some of the highest costs for electricity in the country. Making Alaska utilities, and ultimately their customers, responsible for damages caused by vegetation outside of utility control will drive those costs even higher. This could raise the prospect of financial difficulty for utilities themselves, as has happened in California.

Benefits:
Clarify regulatory framework to provide utilities, state agencies, and private citizens understanding of responsibilities in transmission right of ways.

How Do We Get There?
The Alaska legislature can protect electric ratepayers by making clear in statute that electric utilities can only be held liable for damage, death or personal injury from contact between vegetation and the utility's facilities if the vegetation is located entirely within the boundaries of the utility's right-of-way. The state can help mitigate fire risk by continuing to provide funding for the mitigation of spruce beetle-killed tree on private lands outside of utility right-of ways , which are a significant problem in many parts of the state.

Implementation Timeline:
Begin in 2024

Expected Results:
Protect Alaska utilites and their rate-payers from liability and financial risk due to vegetation outside of their control.

STRATEGY F-1: IMPROVE ELECTRICAL TRANSMISSION SYSTEM

ACTION F-1.3:

Review 17 AAC 15.131. Utility accommodation on controlled-access highways and associated DOT policies and practices in order to minimize costs to Alaska utilities and ratepayers with regard to the use of DOT right-of-ways for electric transmission and distribution lines.

Background:
Urban growth has necessitated the buildout of transportation and utility infrastructure, frequently in several overlapping and sometimes conflicting phases. While many of the larger road construction projects are primarily federally funded, in many instances, DOT has required the local utilities to bear the costs of moving electrical infrastructure that is associated or conflicting with the road projects.

Sharing rights-of-way can often be the most efficient means of timely supporting demand driven development. DOT should adopt a practice of including electrical infrastructure costs within the rights of way as part of the federally funded road project.

Benefits:
Reduce utility costs for electrical infrastructure within DOT right of ways.

How Do We Get There?
Review DOT policies and improve collaboration and practice between DOT and the utilities. Adopt improved regulatory guidance as appropriate.

Implementation Timeline:
2024

Expected Results:
Reduce utility costs for electrical infrastructure within DOT right of ways.

STRATEGY F-1: IMPROVE ELECTRICAL TRANSMISSION SYSTEM

ACTION F-1.4:

Establish a State/Municipal, Federal, ANCSA corps and tribe planning effort to focus on future transmission and distribution siting and ROW's to facilitate efficient buildout of Alaska's infrastructure.

Background:
One of the most significant barriers to cost effective expansion of electrical transmission infrastructure is the cost of right-of-way acquisition. Project planning delays, permitting delays, and opposition from private land owners all result in increased costs and project schedules.

The State should stand up a specific planning team, perhaps within an augmented Alaska Energy Authority, to identify future transmission and major distribution infrastructure needs, including those that might facilitate a variety of future renewable generation technologies and locations. The location for this infrastructure should be coordinated with local utilities and other state agencies. Rights of way should be identified, included in land use planning, and acquired where necessary.

Benefits:
Reduce the future costs of transmission system buildout and improve Alaska's ability to timely respond to changing electrical generation technologies.

How Do We Get There?
Direct the appropriate State agency to stand up a specific future electrical transmission and distribution system planning effort.

Implementation Timeline:
2024

Expected Results:
Reduce the future costs of transmission system buildout and improve Alaska's ability to timely respond to changing electrical generation technologies.

STRATEGY F-1: IMPROVE ELECTRICAL TRANSMISSION SYSTEM

ACTION F-1.5:

Modify 11 ACC 93.120 and other permits related to hydro-electric generatrion projects in order to accelerate design, construction and operation to these new power sources.

Background:

The foundation of Alaska's most cost-effective energy lies in its legacy hydropower infrastructure, some of which dates back decades or even a century. With proper maintenance, these hydropower systems have a life expectancy of over 100 years. Once the hydropower project's initial debts are settled, they yield consistent, renewable, and lowest-cost power, benefiting multiple generations of Alaskans and commerce today and well into the future.

Historically, Alaska's economic vitality is due directly to its hydropower assets. Whether the small local hydropower systems that powered early mining and fishing sectors or the subsidized projects like Bradley Lake and Snettisham Hydro and the hydropower investments from the era of the Four Dam Pool, these assets have consistently provided low-cost energy, driving Alaska's prosperity.

Both in Alaska and across the U.S., the National Hydropower industry is expanding to include river hydrokinetics, tidal, and marine power projects as hydropower projects. As these technologies evolve, Alaska's extensive coastline and lengthy rivers — greater than all other states combined — position it to capitalize on these innovations and benefit from these advancements to provide energy security and lower the energy cost for Alaska.

Today, hydropower accounts for 29% of Alaska's electricity. This reliable power source underpins vital sectors of the Alaskan economy: mining, fisheries, military, and tourism, ensuring energy security and economic stability for the state.

Benefits:

Hydropower in Alaska is not just an energy source; it's our Alaska energy DNA. Historically, hydropower has consistently delivered the state's most affordable power. By investing in hydroelectric infrastructure, we're not just tapping into a proven energy solution but securing Alaska's energy future. This investment strategy, rooted in a track record over a century, offers unmatched cost-effectiveness in the long run and past most investment cycles. While the initial outlay is significant, the long lifecycle of hydropower — exceeding 100 years — ensures that Alaska is planting seeds for today's needs and also reaping benefits for future generations with sustainable, clean energy. Investing in hydropower is our Alaska commitment to Alaska's proven energy model, where hydropower assets exist for a brighter, more affordable, energy-secure future for Alaska.

How Do We Get There?

Evaluate and execute adaptive investment practices from the Bradley Lake and Four Dam Pool model and combine them with some of the prudent practices of BC Hydro to create a public-private State of Alaska corporation to develop, invest, own, and oversee operations of new hydropower facilities in Alaska.

Provide and fund AEA the authority to identify and invest in regional hydropower and hydropower transmission and distribution assets for the public benefit.

Encourage utilities to financially participate in ownership and long-term offtake arrangements to provide energy security and growth in service areas or to allow utilities to service new large industrial loads-mining and cruise industry shore power.

Combine federal tax incentives, grants, and loan programs to optimize lower-cost financing and equity costs to lower the cost of power now and over the life of the assets.

Establish a State of Alaska Power Fund to own and operate Alaska hydropower assets that can provide regional benefits.

Establish State of Alaska administered and supervised investment mechanisms and equity ownership for utility, tribal,

ACTION F-1.5 (CONT.):

Modify 11 ACC 93.120 and other permits related to hydro-electric generatrion projects in order to accelerate design, construction and operation to these new power sources.

and local community investments, combining local equity with federal financing through existing or new federal programs. Seek federal legislation to provide funding for a State of Alaska Power Fund to help Alaska provide energy security for Alaska military bases and installations for the benefit of Alaska support for Alaska-based military and Coast Guard operations for national security.

Identify, support, and fund to build local and regional hydropower to serve Alaska communities and multiple transmission interconnected communities at economies of scale, providing lower-cost power. Alaska Energy Authority (AEA) and Alaska Industrial Development and Export Authority (AIDEA) financially support through existing programs and investments any executable-ready hydropower project (permitted/licensed, designed, economically feasible) that will provide lower-cost electricity over the project's life.

Identify, seek, and support the construction of hydropower assets to export power to provide economies of scale for hydropower projects to lower the energy cost for Alaskans by selling export power to finance and economically enhance a hydropower project's economic viability. Develop and support economically and with regulatory approval intertie connections and transmission corridors to strategically place transmission to interconnect current and future transmission to provide transmission corridors to known and undeveloped hydropower locations.

Establish a State/Federal Power board, through Congressional legislation, to cooperatively have the Federal government land owners actively assist the State of Alaska in developing hydropower assets on federal lands. Review, refine, and amend Sec. 42.45.350. Licensing for water-power development projects and enacting state regulatory control over small hydropower development with Alaska interdepartmental coordination to support hydropower projects with abbreviated regulatory permitting.

Governors Office and AEA work with the Congressional delegation to craft legislation to ensure that FERC-exempt or state-licensed hydropower projects qualify for all eligible federal Production Tax Credits (PTC) and Investment Tax Credits (ITC). The Governor's Office and AEA work with Alaska's Congressional delegation to craft and support legislation identifying hydropower as a renewable carbon-free energy source for all federal legislative, regulatory, taxation, incentive, and national security purposes.

AEA provides an option for Renewable Energy Credit (REC) participation through a statewide pool. This pooling approach aims to achieve economies of scale when selling RECs. By doing so, both state-owned and other hydropower projects can maximize the value of Alaska's hydropower RECs. The ultimate goal is to reduce the cost of electricity for Alaskans. These action steps have statewide applicability for other regions of Alaska where critically important hydropower development assets exist.

Implementation Timeline:
This action item has a blend of Immediate for execution-ready hydropower and short-term, mid-term, and long-term tasks for hydropower in earlier analysis and development stages.

Expected Results:
The State of Alaska can take an active, willful, and calculated role in lowering the energy cost for Alaskans, energy security, and economic prosperity by effectively guiding hydropower development policy and investments in hydropower assets and related transmission infrastructure safeguarding Alaska's energy future with an Alaskan tried and proven energy model. This structured execution list offers a clear roadmap of the proposed actions to initiate and promote hydropower development to lower the energy cost for Alaskans, provide energy security, and increase the diversification of Alaska's energy-producing assets.

STRATEGY F-2: ENCOURAGE ENERGY AND GENERATION DIVERSIFICATION

ACTION F-2.2:

Maximize future optionality for use of Alaska sourced fossil fuels by monitoring and evaluating third party development of carbon capture and sequestration technologies and passing legislation establishing a regulatory framework for the geologic storage of carbon

Background:
While diversification of energy sources is encouraged and will occur, under all likely scenarios fossil fuels will remain critically important for electrical generation and space heating in Alaska for the forseeable future.

To ensure Alaska retains full optionality with respect to continued use of fossil fuels for electrical generation and space heating and to ensure that Alaska avails itself of every practical alternative to reducing emissions from fossil fuels, the technologies that are being developed to capture and sequester carbon must be tracked, monitored and evaluated.

Benefits:
Timely utilization of carbon capture technologies or techniques that offer practical application in Alaska will offer an opportunity for Alaska to optimize utililization of its abundant fossil fuel resources.

How Do We Get There?
AEA should designate a specific department with the responsibility to monitor technological advances in carbon capture and to timely report developments with applicability in Alaska. Support passage of SB 49 and HB 50 to pro-actively establish a framework to support carbon storage.

Implementation Timeline:
Begin in 2024.

Expected Results:
Ensure that Alaska is timely positioned to implement carbon capture technologies.

STRATEGY F-2: ENCOURAGE ENERGY AND GENERATION DIVERSIFICATION

ACTION F-2.3:

Encourage development of cost effective hydropower projects throughout Alaska, including ensuring that state funds are appropriated for timely investment in the Dixon Diversion hydroproject as project feasibility warrants.

Background:
The foundation of Alaska's most cost-effective energy lies in its legacy hydropower infrastructure, some of which dates back decades or even a century. With proper maintenance, these hydropower systems have a life expectancy of over 100 years. Once the hydropower project's initial debts are settled, they yield consistent, renewable, and lowest-cost power, benefiting multiple generations of Alaskans and commerce today and well into the future.

Historically, Alaska's economic vitality is due directly to its hydropower assets. Whether the small local hydropower systems that powered early mining and fishing sectors or the subsidized projects like Bradley Lake and Snettisham Hydro and the hydropower investments from the era of the Four Dam Pool, these assets have consistently provided low-cost energy, driving Alaska's prosperity.

Both in Alaska and across the U.S., the National Hydropower industry is expanding to include river hydrokinetics, tidal, and marine power projects as hydropower projects. As these technologies evolve, Alaska's extensive coastline and lengthy rivers — greater than all other states combined — position it to capitalize on these innovations and benefit from these advancements to provide energy security and lower the energy cost for Alaska.

Today, hydropower accounts for 29% of Alaska's electricity. This reliable power source underpins vital sectors of the Alaskan economy: mining, fisheries, military, and tourism, ensuring energy security and economic stability for the state.

Benefits:
Investing in hydropower is our Alaska commitment to Alaska's proven energy model, where hydropower assets exist for a brighter, more affordable, energy-secure future for Alaska.

How Do We Get There?
Evaluate and execute adaptive investment practices from the Bradley Lake and Four Dam Pool model and combine them with some of the prudent practices of BC Hydro to create a public-private State of Alaska corporation to develop, invest, own, and oversee operations of new hydropower facilities in Alaska.

Provide and fund AEA the authority to identify and invest in regional hydropower and hydropower transmission and distribution assets for the public benefit, like the Dixon Diversion project that has the potential to increase Bradley Lake power generation by 50%.

Encourage utilities to financially participate in ownership and long-term offtake arrangements to provide energy security and growth in service areas or to allow utilities to service new large industrial loads-mining and cruise industry shore power.

Combine federal tax incentives, grants, and loan programs to optimize lower-cost financing and equity costs to lower the cost of power now and over the life of the assets.

Establish a State of Alaska Power Fund to own and operate Alaska hydropower assets that can provide regional benefits.

STRATEGY F-2: ENCOURAGE ENERGY AND GENERATION DIVERSIFICATION

ACTION F-2.3 (CONT.):

Encourage development of cost effective hydropower projects throughout Alaska, including ensuring that state funds are appropriated for timely investment in the Dixon Diversion hydroproject as project feasibility warrants.

Establish State of Alaska administered and supervised investment mechanisms and equity ownership for utility, tribal, and local community investments, combining local equity with federal financing through existing or new federal programs.

Seek federal legislation to provide funding for a State of Alaska Power Fund to help Alaska provide energy security for Alaska military bases and installations for the benefit of Alaska support for Alaska-based military and Coast Guard operations for national security.

Identify, support, and fund to build local and regional hydropower to serve Alaska communities and multiple transmission interconnected communities at economies of scale, providing lower-cost power. Alaska Energy Authority (AEA) and Alaska Industrial Development and Export Authority (AIDEA) financially support through existing programs and investments any executable-ready hydropower project (permitted/licensed, designed, economically feasible) that will provide lower-cost electricity over the project's life.

Identify, seek, and support the construction of hydropower assets to export power to provide economies of scale for hydropower projects to lower the energy cost for Alaskans by selling export power to finance and economically enhance a hydropower project's economic viability.

Develop and support economically and with regulatory approval intertie connections and transmission corridors to strategically place transmission to interconnect current and future transmission to provide transmission corridors to known and undeveloped hydropower locations.

Establish a State/Federal Power board, through Congressional legislation, to cooperatively have the Federal government land owners actively assist the State of Alaska in developing hydropower assets on federal lands. Review, refine, and amend Sec. 42.45.350. Licensing for water-power development projects and enacting state regulatory control over small hydropower development with Alaska interdepartmental coordination to support hydropower projects with abbreviated regulatory permitting.

Governors Office and AEA work with the Congressional delegation to craft legislation to ensure that FERC-exempt or state-licensed hydropower projects qualify for all eligible federal Production Tax Credits (PTC) and Investment Tax Credits (ITC).

The Governor's Office and AEA work with Alaska's Congressional delegation to craft and support legislation identifying hydropower as a renewable carbon-free energy source for all federal legislative, regulatory, taxation, incentive, and national security purposes.

AEA provides an option for Renewable Energy Credit (REC) participation through a statewide pool. This pooling approach aims to achieve economies of scale when selling RECs. By doing so, both state-owned and other hydropower projects can maximize the value of Alaska's hydropower RECs. The ultimate goal is to reduce the cost of electricity for Alaskans.

These action steps have statewide applicability for other regions of Alaska where critically important hydropower development assets exist.

STRATEGY F-2: ENCOURAGE ENERGY AND GENERATION DIVERSIFICATION

ACTION F-2.3 (CONT.):

Encourage development of cost effective hydropower projects throughout Alaska, including ensuring that state funds are appropriated for timely investment in the Dixon Diversion hydroproject as project feasibility warrants.

Implementation Timeline:
This action item has a blend of Immediate for execution-ready hydropower and short-term, mid-term, and long-term tasks for hydropower in earlier analysis and development stages.

Expected Results:
The State of Alaska can take an active, willful, and calculated role in lowering the energy cost for Alaskans, energy security, and economic prosperity by effectively guiding hydropower development policy and investments in hydropower assets and related transmission infrastructure safeguarding Alaska's energy future with an Alaskan tried and proven energy model.

STRATEGY F-3: UTILITY REGULATION

ACTION F-3.1:

Provide support for the Regulatory Commission of Alaska (RCA) sufficient to improve the RCA's ability to respond timely and appropriately to the complex energy production, generation, and transmission challenges in Alaska.

Background:
The RCA is responsible for regulation of public utilities and pipeline carriers in Alaska. Most of the statutes and regulations that govern RCA authority were developed during a period of time when the electrical generation and transmission utilities in Alaska generally operated islanded systems primarily built around baseload generation. However, as Alaska has grown and the technology for generation, transmission, and storage has advanced, the responsibilities of the RCA have grown more complex.

The Task Force did not conduct a review sufficient to be able to recommend a comprehensive overhaul of the statutes or regulations that govern the RCA. Anectodely, it is understood that there are some improvements that could be made to facilitate more efficient utility regulation. It is also understood that the RCA is evaluating its own process and regulations to identify potential efficiencies.

However, the Task Force did find that within all expected scenarios, the RCA must be provided sufficient budgetary support to be able to attract and retain the highly skilled technical, legal, and administrative staff necessary to help adjudicate the complex and rapidly increasing pace of decisions that are necessary in today's to support Alaska's continued access to affordable, reliable, and resilient energy.

Benefits:
Provide enhanced regulatory support to better facilitate proposed recommendations of the Task Force.

How Do We Get There?
Executive branch collaborate with RCA to incorporate staff budgetary recommendations into 2024 operating budget.

Implementation Timeline:
2024 Alaska operating budget.

Expected Results:
Reduced casefile processing time by a highly skilled RCA will support Alaska's transition to a more integrated and technologically advanced energy utility landscape.

STRATEGY F-3: UTILITY REGULATION

ACTION F-3.2:

As Alaska works toward achieving a goal of $.10 cents per kw/hr the Task Force recommends maintaining and expanding the PCE Program until all Alaskans benefit from actual equitable and lower cost energy.

Background:
The Task Force recognizes the Power Cost Equalization Program and its Endowment as established remains an important though inadequate measure to provide all Alaskans with equitable and low energy costs. Long-term the PCE Program must be replaced with low cost power However, until energy/power projects are implemented for realization of actual equitable and low cost energy to all Alaskans, the PCE program must, in the interim, be expanded to achieve its original intent. Any reduction or replacement of the PCE Program must be paired with the planning and construction of proven methods that attain actual equitable and low cost energy as exemplified by the Southeast and Railbelt communities

The PCE program provides financial assistance to households and some community facilities in rural areas of Alaska where, in many instances, the kilowatt hour charge for electricity can be three to five times higher than the average kWh rate of 19.10¢ (7/19) between Anchorage, Fairbanks and Juneau. The PCE program was established to ensure rural residents and households had the same energy rate basis at the same time state funds were used to construct major energy projects to assist the development of more urban areas of Alaska. Most urban and road connected communities have directly benefited from major state-subsidized energy projects such as the Four Dam Pool, Bradley Lake, and the Alaska Intertie. Rural communities not on the road system that are dependent on diesel fuel do not directly benefit from these large subsidized energy projects.

All Alaskans therefore share an obligation to support investments that lower energy costs on an equitable basis for all Alaskans, rural as well as urban. This must remain a key objective. The State of Alaska's obligation is further cemented by the statutory agreement enacted by Congress between the State and the Natives for the development of all Alaska and the economic well being of its residents, rural and urban. The Alaska Native Claims Settlement Act (ANCSA) mandated the creation of Alaska Native Corporations to lead the development with the State leading on the construction of appropriate infrastructure, including energy, to ensure the success of economic development.
The Power Cost Equalization (PCE) Endowment must be preserved with added investment and expanded flexibility of use to provide certainty for 200 Alaska communities. The statutory purposes and regulatory application of the PCE program must remain focused on a statewide objective of lowering energy costs.

Under existing RCA guidance, the PCE program has allowed operation and maintenance costs of renewable generation (whether locally funded or acquired by grant) to qualify as allowable non-fuel costs. However, the RCA has not allowed the capital costs of granted assets (either conventional or renewable) to qualify toward PCE reimbursement. The capital costs of locally funded generation assets (whether conventional or renewable) do qualify toward determing PCE reimbursement. This committee believes that all of these practices are consistent with the statutory purposes of the PCE program.

When communities invest their own funds in conventional or renewable generation projects that drive local electricity costs lower, the state should examine any disparity between the amortization and depreciation schedules for generation assets to assess impacts on the cash flow of the community and/or local utility. The State should continue to allow flexibility within the PCE program so as to encourage such local investments that result in lower local costs (and thus also lower PCE costs).

In order to keep all Alaskans focused on the goal of driving overall power costs lower where possible, not higher, whether urban or rural, the RCA should ensure that Independent Power Producers will not be allowed to generate

STRATEGY F-3: UTILITY REGULATION

ACTION F-3.2: (CONT.)

As Alaska works toward achieving a goal of $.10 cents per kw/hr the Task Force recommends maintaining and expanding the PCE Program until all Alaskans benefit from actual equitable and lower cost energy.

and sell power to a local utility, only to have that local utility in turn seek PCE payment based on something higher than the direct operating cost of generation. Moreover, generation assets acquired by grant should remain ineligible for PCE costs. These practices are necessary in order to maintain transparency, equity, and the overall integrity of the PCE program. When reduced power costs in a community result in reduced PCE reimbursement to that community, especially when it is a result of granted renewable generation assets, (and considering that the reduced power costs benefit businesses and larger users that are not included in PCE calculations) that should be viewed as a success for all of Alaska. PCE should remain for its purpose, Power Cost Equalization. It should not become a municipal funding mechanism.

How Do We Get There?
All stakeholders involved (Communities, Legislature, Executive Branch, AEA, RCA, Native organizations, utilities and non-utility generators) work together to insure the integrity and full funding of the PCE Endowment while energy/power projects are implemented for realization of actual equitable and low cost energy.

Implementation Timeline:
The Legislature should fund the PCE program from the PCE Endowment earnings and other funds at 100 percent for FY 2024 and beyond. Full funding that actually implements the intent of the PCE program and expanded to all rural power consumers.

Benefits and Expected Results:
Provide funds to ensure equitable power costs and expand the PCE Program to all users until infrastructure investments and technology upgrades provide equity and bring the cost of energy down in rural areas. Maintenance of financial support to communities with high costs of energy generation while working on initiatives to bring the costs of energy down statewide.

STRATEGY F-3: UTILITY REGULATION

Action F-3.3:

Modify 3 AAC 46.270(f) to reduce the ambiguity surrounding avoided cost standards as they apply to new generation assets.

Background:
When regulated utilities receive RCA approval for construction of new generation assets, the costs of construction and operation of those new assets are recovered over time by the utility from their ratepayers once the asset is "used and useful". In some circumstances, utilities have built new generation that is deemed necessary for their ratepayers, but that results, when looking at the grid as an interconnected unit, in excess and unnecessary facilities. Statutes and regulations have evolved over time to encourage an interconnected perspective and to regulate large new generation additions generally on an "avoided cost" or less than marginal cost basis.

3 AAC 46.270(f) provides that the RCA can only approve a large energy facility that has not begun construction prior to the certification of an Electric Reliability Organization to which the constructing entity would be subject and is not included in an integrated resource plan's preferred resource portfolio if "the utility's failure to acquire the facility could result in degradation to utility customer service or reliability requirements, is necessary to remedy a critical known deficiency, or would provide energy service at less than current marginal costs" and "the degradation will occur, the critical known deficiency will persist, or energy service total costs will not be reduced if the large energy facility is not undertaken before the next integrated resource plan has been completed."

As utilities plan for the future, including consideration of new renewable generation technologies, decisions will have to be made years in advance of construction and commissioning of the new generation. While current regulations provide for submission of an integrated resource plan that incorporates future generation technologies and costs, it can take several years to develop and receive approval for such a plan.

There is uncertainty surrounding the existing regulatory reference to "current" marginal costs. This could constrain construction of renewable projects that might be more expensive than "current" costs (i.e. with Cook Inlet natural gas at $8/mcf), but less expensive than costs over the lifetime of the project (i.e with imported natural gas at $12-$18/mcf). It is therefore recommended that the the regulation be revised to allow consideration of projected avoided costs.

Benefits:
Strike the right balance between making well-supported decisions and finding the flexibility to make timely decisions so that the new generation achieves lower costs for Alaskans in the long term.

How Do We Get There?
With utility/RCA/public involvement, evaluate and recommend any specific statute(s)/regulations changes that may be appropriate related to types of avoided costs in RCA review of large energy facilities outside of an ERO's Integrated Resource Plans.

Implementation Timeline:
2024

Expected Results:
Improved regulatory process that provides an opportunity for the development of necessary and appropriate future generation utilizing the best thought out metrics available at the time, while protecting ratepayers from having to bear the cost of excess construction.

STRATEGY F-3: UTILITY REGULATION

ACTION F-3.6:

Provide incentivized power tariff rate to attract new industry to Alaska.

Background:
Utilities in Alaska are regulated generally according to a "cost causer-cost payer" principle. Different customer classes are charged different tariffs generally on the basis of the cost of providing service to that class. When circumstances warrant, different customers within a given class can be charged different tariffs if so approved by the RCA according to a special contract.
There is a potential opportunity whereby interested utilities might be able to pair new or surplus generation with new industrial customers such that an attractive tariff rate could be made available to the new customer for a period of time to incentivize that customer to locate the business in Alaska. Perhaps under approved special contracts, the business would commit to take the power, and the utility could then commit to construct and provide the generation.

After the incentive period lapses, it would be anticipated that the increased load and cost competitive generation spread over the system would result in reduced costs for all.

Benefits:
New industry in Alaska and lower long term power costs.

How Do We Get There?
With utility/RCA/public involvement, evaluate and recommend any specific statute(s)/regulations changes that are needed to allow an opportunity to provide incentivized tarriff rates.

Implementation Timeline:
2024

Expected Results:
New industry in Alaska, economic development, and lower long term power costs.

APPENDIX III.
DEFINITIONS

APPENDIX III: ALASKA ENERGY SECURITY TASK FORCE DEFINITIONS AND ACRONYMS

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ALASKA ENERGY SECURITY TASK FORCE
REPORT DEFINITIONS

Active power: The component of electric power that performs work, typically measured in kilowatts (kW) or megawatts(MW). Also known as "real power." The terms "active" or "real" are used to modify the base term "power" to differentiate it from Reactive Power. See Power, Reactive Power, Apparent Power

Actual peak reduction: The actual reduction in annual peak load (measured in kilowatts) achieved by customers that participate in a utility demand-side management (DSM) program. It reflects the changes in the demand for electricity resulting from a utility DSM program that is in effect at the same time the utility experiences its annual peak load, as opposed to the installed peak load reduction capability (i.e., potential peak reduction). It should account for the regular cycling of energy efficient units during the period of annual peak load.

Adjusted electricity: A measurement of electricity that includes the approximate amount of energy used to generate electricity. To approximate the adjusted amount of electricity, the site-value of the electricity is multiplied by a factor of 3. This conversion factor of 3 is a rough approximation of the Btu value of raw fuels used to generate electricity in a steam-generation power plant.

All-electric home: A residence in which electricity is used for the main source of energy for space heating, water heating, and cooking. Other fuels may be used for supplementary heating or other purposes.

Alternative Fuel An alternative to gasoline or diesel fuel that is not produced in a conventional way from crude oil. Examples include **compressed natural gas (CNG)**, **liquefied petroleum gas (LPG)**, **liquefied natural gas (LNG)**, **ethanol**, **methanol**, and **hydrogen**.

Alternative fuel: Alternative fuels, for transportation applications, include the following:

- methanol
- denatured ethanol, and other alcohols
- fuel mixtures containing 85 percent or more by volume of methanol, denatured ethanol, and other alcohols with gasoline or other fuels
- natural gas
- liquefied petroleum gas (propane)
- hydrogen
- coal-derived liquid fuels
- fuels (other than alcohol) derived from biological materials (biofuels such as soy diesel fuel)
- electricity (including electricity from solar energy)

"... any other fuel the Secretary determines, by rule, is substantially not petroleum and would yield substantial energy security benefits and substantial environmental benefits." The term "alternative fuel" does not include alcohol or other blended portions of primarily petroleum-based fuels used as oxygenates or extenders, i.e. MTBE, ETBE, other ethers, and the 10-percent ethanol portion of gasohol.

Alternative fuel vehicle (AFV): A vehicle designed to operate on an alternative fuel (for example, compressed natural gas, liquefied propane gas, or electricity). The vehicle could be either a dedicated vehicle designed to operate exclusively on alternative fuel or a nondedicated vehicle designed to operate on alternative fuel and/or a gasoline or diesel fuel.

Amortization: The depreciation, depletion, or charge-off to expense of intangible and tangible assets over a period of time. In the extractive industries, the term is most frequently applied to mean either (1) the periodic charge-off to expense of the costs associated with non-producing mineral properties incurred prior to the time

when they are developed and entered into production or (2) the systematic charge-off to expense of those costs of productive mineral properties (including tangible and intangible costs of prospecting, acquisition, exploration, and development) that had been initially capitalized (or deferred) prior to the time the properties entered into production, and thereafter are charged off as minerals are produced.

Arbitrage: The simultaneous purchase and sale of identical or similar assets across two or more markets in order to profit from a temporary price discrepancy.

Average revenue per kilowatthour: The average revenue per kilowatthour of electricity sold by sector (residential, commercial, industrial, or other) and geographic area (State, Census division, and national) is calculated by dividing the total monthly revenue by the corresponding total monthly sales for each sector and geographic area.

Base gas: The quantity of natural gas needed to maintain adequate reservoir pressures and deliverability rates throughout the withdrawal season. Base gas usually is not withdrawn and remains in the reservoir. All natural gas native to a depleted reservoir is included in the base gas volume.

Base load: The minimum amount of electric power delivered or required over a given period of time at a steady rate.

Base load capacity: The generating equipment normally operated to serve loads on an around-the-clock basis.

Base load plant: A plant, usually housing high-efficiency steam-electric units, which is normally operated to take all or part of the minimum load of a system, and which consequently produces electricity at an essentially constant rate and runs continuously. These units are operated to maximize system mechanical and thermal efficiency and minimize system operating costs.

Base rate: A fixed kilowatthour charge for electricity consumed that is independent of other charges and/or adjustments.

Battery: An energy storage device that produces electricity by means of chemical action. It consists of one or more electric cells each of which has all the chemicals and parts needed to produce an electric current.

Biodiesel (B100): Renewable fuel consisting of mono alkyl esters (long chain fatty acids) that are produced through the conversion of animal fats, vegetable oils, and recycled grease feedstocks (transesterification) to produce biodiesel. Biodiesel is typically blended with petroleum diesel in concentrations of 2% to 20% biodiesel, or B2 to B20.

Biofuels: Liquid fuels and blending components produced from biomass feedstocks, used primarily for transportation.

Biogas: A mixture of methane and other gases produced by decomposing matter in an oxygen-free (anaerobic) environment with the assistance of microbes. Biogas is typically produced at landfills and anaerobic-digesters.

Biomass: Organic nonfossil material of biological origin constituting a renewable energy source.

Biomass gas: A medium Btu gas containing methane and carbon dioxide, resulting from the action of microorganisms on organic materials such as a landfill.

Boiling-water reactor (BWR): A light-water reactor in which water, used as both coolant and moderator, is allowed to boil in the core. The resulting steam can be used directly to drive a turbine.

Breeder reactor: A reactor that both produces and consumes fissionable fuel, especially one that creates more fuel than it consumes. The new fissionable material is created by a process known as breeding, in which neutrons from fission are captured in fertile materials.

British Thermal Unit (Btu): The mean British thermal unit is 1/180 of the heat required to raise the temperature of one pound (1 lb) of **water** from 32°F to 212°F at a constant **atmospheric pressure**. The Btu is equal to the quantity of heat required to raise one pound (1 lb) of water 1°F.

Btu conversion factor: A factor for converting energy data between one unit of measurement and British thermal units (Btu). Btu conversion factors are generally used to convert energy data from physical units of measure (such as barrels, cubic feet, or short tons) into the energy-equivalent measure of Btu. (See http://www.eia.gov/totalenergy/data/monthly/pdf/sec13.pdf for further information on Btu conversion factors.)

Btu per cubic foot: The total heating value, expressed in Btu, produced by the combustion, at constant pressure, of the amount of the gas that would occupy a volume of 1 cubic foot at a temperature of 60 degrees F if saturated with water vapor and under a pressure equivalent to that of 30 inches of mercury at 32 degrees F and under standard gravitational force (980.665 cm. per sec. squared) with air of the same temperature and pressure as the gas, when the products of combustion are cooled to the initial temperature of gas and air when the water formed by combustion is condensed to the liquid state.(Sometimes called gross heating value or total heating value.)

Bunker fuels: Fuel supplied to ships and aircraft, both domestic and foreign, consisting primarily of residual and distillate fuel oil for ships and kerosene-based jet fuel for aircraft. The term "international bunker fuels" is used to denote the consumption of fuel for international transport activities. Note: For the purposes of greenhouse gas emissions inventories, data on emissions from combustion of international bunker fuels are subtracted from national emissions totals. Historically, bunker fuels have meant only ship fuel.

Capacity (purchased): The amount of energy and capacity available for purchase from outside the system.

Capacity charge: An element in a two-part pricing method used in capacity transactions (energy charge is the other element). The capacity charge, sometimes called Demand Charge, is assessed on the amount of capacity being purchased.

Capacity factor: The ratio of the electrical energy produced by a generating unit for the period of time considered to the electrical energy that could have been produced at continuous full power operation during the same period.

Capacity transaction: The acquisition of a specified quantity of generating capacity from another utility for a specified period of time. The utility selling the power is obligated to make available to the buyer a specified quantity of power.

Capacity utilization: Capacity utilization is computed by dividing production by productive capacity and multiplying by 100.

Capital cost: The cost of field development and plant construction and the equipment required for industry operations.

Capital stock: Property, plant and equipment used in the production, processing and distribution of energy resources.

Carbon Dioxide (CO_2): A colorless, odorless, noncombustible gas that is slightly more than 1.5 times as dense as air and becomes a solid (dry ice) below -78.5°C. It is present in the atmosphere as a result of the decay of organic material and the respiration of living organisms. It is produced by the burning of wood, coal, coke, oil, natural gas, or other fuels containing carbon.

Carbon Monoxide (CO): A colorless, odorless, tasteless, poisonous gas that results from incomplete **combustion** of **carbon** with **oxygen**.

Carbon intensity: The amount of carbon by weight emitted per unit of energy consumed. A common measure of carbon intensity is weight of carbon per British thermal unit (Btu) of energy. When there is only one fossil fuel under consideration, the carbon intensity and the emissions coefficient are identical. When there are several fuels, carbon intensity is based on their combined emissions coefficients weighted by their energy consumption levels. Also see Emissions coefficient and Carbon output rate.

Carrying costs: Costs incurred in order to retain exploration and property rights after acquisition but before production has occurred. Such costs include legal costs for title defense, ad valorem taxes on nonproducing mineral properties, shut-in royalties, and delay rentals.

Chemical energy is energy stored in the bonds of atoms and molecules. Batteries, biomass, petroleum, natural gas, and coal are examples of chemical energy. For example, chemical energy is converted to thermal energy when people burn wood in a fireplace or burn gasoline in a car's engine.

Chlorofluorocarbon (CFC): Any of various compounds consisting of carbon, hydrogen, chlorine, and flourine used as refrigerants. CFCs are now thought to be harmful to the earth's atmosphere.

Clean Development Mechanism (CDM): A Kyoto Protocol program that enables industrialized countries to finance emissions-avoiding projects in developing countries and receive credit for reductions achieved against their own emissions limitation targets. Also see Kyoto Protocol.

Climate change: A term used to refer to all forms of climatic inconsistency, but especially to significant change from one prevailing climatic condition to another. In some cases, "climate change" has been used synonymously with the term "global warming"; scientists, however, tend to use the term in a wider sense inclusive of natural changes in climate, including climatic cooling.

Coincidental demand: The sum of two or more demands that occur in the same time interval.

Coincidental peak load: The sum of two or more peak loads that occur in the same time interval.

Combined-heat-and-power (CHP) plant: A plant designed to produce both heat and electricity from a single heat source. Note: This term is being used in place of the term "cogenerator" that was used by EIA in the past. CHP better describes the facilities because some of the plants included do not produce heat and power in a sequential fashion and, as a result, do not meet the legal definition of cogeneration specified in the Public Utility Regulatory Policies Act (PURPA).

Combustion: The burning fire produced by the proper combination of fuel, heat, and **oxygen**. In the engine, the rapid burning of the air-fuel mixture that occurs in the **combustion chamber**.

Combustion Chamber: In an internal combustion engine, the space between the top of the piston and the cylinder head in which the air-fuel mixture is burned.

Commercial building: A building with more than 50 percent of its floor space used for commercial activities. Commercial buildings include, but are not limited to, stores, offices, schools, churches, gymnasiums, libraries, museums, hospitals, clinics, warehouses, and jails. Government buildings are included except for buildings on military bases or reservations.

Commercial facility: An economic unit that is owned or operated by one person or organization and that occupies two or more commercial buildings at a single location. A university and a large hospital complex are examples of a commercial multi-building facility.

Commercial sector: An energy-consuming sector that consists of service-providing facilities and equipment of businesses; Federal, State, and local governments; and other private and public organizations, such as religious, social, or fraternal groups. The commercial sector includes institutional living quarters. It also includes sewage treatment facilities. Common uses of energy associated with this sector include space heating, water heating, air conditioning, lighting, refrigeration, cooking, and running a wide variety of other equipment. Note: This sector includes generators that produce electricity and/or useful thermal output primarily to support the activities of the above-mentioned commercial establishments.

Composite: Material created by combining materials differing in composition or form on a macroscale to obtain specific characteristics and properties. The constituents retain their identity; they can be physically identified, and they exhibit an interface among one another.

Compressed Hydrogen Gas (CHG): Hydrogen gas compressed to a high pressure and stored at **ambient temperature**.

Compressed Natural Gas (CNG): Mixtures of **hydrocarbon** gases and vapors, consisting principally of **methane** in gaseous form that has been compressed.

Conservation: A reduction in energy consumption that corresponds with a reduction in service demand. Service demand can include buildings-sector end uses such as lighting, refrigeration, and heating; industrial processes; or vehicle transportation. Unlike energy efficiency, which is typically a technological measure, conservation is better associated with behavior. Examples of conservation include adjusting the thermostat to reduce the output of a heating unit, using occupancy sensors that turn off lights or appliances, and car-pooling.

Consumer (energy): Any individually metered dwelling, building, establishment, or location using natural gas, synthetic natural gas, and/or mixtures of natural and supplemental gas for feedstock or as fuel for any purpose other than in oil or gas lease operations; natural gas treating or processing plants; or pipeline, distribution, or storage compressors.

Consumer charge: An amount charged periodically to a consumer for such utility costs as billing and meter reading, without regard to demand or energy consumption.

Cooperative electric utility: An electric utility legally established to be owned by and operated for the benefit of those using its service. The utility company will generate, transmit, and/or distribute supplies of electric energy to a specified area not being serviced by another utility. Such ventures are generally exempt from Federal income tax laws. Most electric cooperatives have been initially financed by the Rural Utilities Service (prior Rural Electrification Administration), U.S. Department of Agriculture.

Cost of capital: The rate of return a utility must offer to obtain additional funds. The cost of capital varies with the leverage ratio, the effective income tax rate, conditions in the bond and stock markets, growth rate of the utility, its dividend strategy, stability of net income, the amount of new capital required, and other factors dealing with business and financial risks. It is a composite of the cost for debt interest, preferred stock dividends, and common stockholders' earnings that provide the facilities used in supplying utility service.

Cost of debt: The interest rate paid on new increments of debt capital multiplied by 1 minus the tax rate.

Cost-based rates (electric): A ratemaking concept used for the design and development of rate schedules to ensure that the filed rate schedules recover only the cost of providing the service. FERC definition

Cost-of-service regulation: A traditional electric utility regulation under which a utility is allowed to set rates based on the cost of providing service to customers and the right to earn a limited profit.

Current assets: Cash and other assets that are expected to be turned into cash, sold, or exchanged within the normal operating cycle of the utility, usually one year. Current assets include cash, marketable securities, receivables, inventory, and current prepayments.

Current liabilities: A debt or other obligation that must be discharged within one year or the normal operating cycle of the utility by expending a current asset or the incurrence of another short-term obligation. Current liabilities include accounts payable, short-term notes payable, and accrued expenses payable such as taxes payable and salaries payable.

Current ratio: The ratio of current assets divided by current liabilities that shows the ability of a utility to pay its current obligations from its current assets. A measure of liquidity, the higher the ratio, the more assurance that current liabilities can be paid.

Dedicated reserves: The volume of recoverable, salable gas reserves committed to, controlled by, or possessed by the reporting pipeline company and used for acts and services for which both the seller and the company have received certificate authorization from the Federal Energy Regulatory Commission (FERC). Reserves include both company-owned reserves (including owned gas in underground storage),reserves under contract from independent producers, and short-term and emergency supplies from the intrastate market. Gas volumes under contract from other interstate pipelines are not included as reserves, but may constitute part or all of a company's gas supply.

Deliverability: Represents the number of future years during which a pipeline company can meet its annual requirements for its presently certificated delivery capacity from presently committed sources of supply. The availability of gas from these sources of supply shall be governed by the physical capabilities of these sources to deliver gas by the terms of existing gas-purchase contracts, and by limitations imposed by State or Federal regulatory agencies.

Delivered (gas): The physical transfer of natural, synthetic, and/or supplemental gas from facilities operated by the responding company to facilities operated by others or to consumers.

Delivered cost: The cost of fuel, including the invoice price of fuel, transportation charges, taxes, commissions, insurance, and expenses associated with leased or owned equipment used to transport the fuel.

Delivered energy: The amount of energy supplied to the end-use sectors (residential, commercial, industrial, and transportation). Includes the coal, natural gas, petroleum products, renewable energy, and electricity sales to ultimate customers purchased by consumers in the end-use sectors. Excludes electricity generated on-site

(such as from rooftop solar panels or combined-heat-and-power systems) and non-marketed renewable energy (solar water heating, ground-source heat pumps, wood from your backyard, etc.) produced and consumed entirely within the sector.

Deliveries (electric): Energy generated by one system and delivered to another system through one or more transmission lines.

Deliveries (electric): Energy generated by one system and delivered to another system through one or more transmission lines.

Diesel fuel system: Diesel engines are internal combustion engines that burn diesel oil rather than gasoline. Injectors are used to spray droplets of diesel oil into the combustion chambers, at or near the top of the compression stroke. Ignition follows due to the very high temperature of the compressed intake air, or to the use of "glow plugs," which retain heat from previous ignitions (spark plugs are not used). Diesel engines are generally more fuel-efficient than gasoline engines but must be stronger and heavier because of high compression ratios.

Diesel-electric plant: A generating station that uses diesel engines to drive its electric generators.

Distributed generator: A generator that is located close to the particular load that it is intended to serve. General, but non-exclusive, characteristics of these generators include: an operating strategy that supports the served load; and interconnection to a distribution or sub-transmission system (138 kV or less).

Distribution provider (electric): Provides and operates the wires between the transmission system and the end-use customer. For those end-use customers who are served at transmission voltages, the Transmission Owner also serves as the Distribution Provider. Thus, the Distribution Provider is not defined by a specific voltage, but rather as performing the Distribution function at any voltage. NERC definition

Electrical energy is delivered by tiny, charged particles called electrons, that typically move through a wire. Lightning is an example of electrical energy in nature.

Electric utility: A corporation, person, agency, authority, or other legal entity or instrumentality aligned with distribution facilities for delivery of electric energy for use primarily by the public. Included are investor-owned electric utilities, municipal and State utilities, Federal electric utilities, and rural electric cooperatives. A few entities that are tariff based and corporately aligned with companies that own distribution facilities are also included.

Electric utility divestiture: The separation of one electric utility function from others through the selling of the management and ownership of the assets related to that function. It is most commonly associated with selling generation assets so they are no longer owned or controlled by the shareholders that own the company's transmission and distribution assets.

Electric utility generator: A generator that is owned by an electric utility, (see definition of electric utility) or a jointly owned generator with the greatest share of the generator being electric utility owned. Note: If two or more owners have equal shares of ownership in a generator, it is considered to be an electric utility generator if any one of the owners meets the definition of electric utility.

Electric utility restructuring: The introduction of competition into at least the generation phase of electricity production, with a corresponding decrease in regulatory control.

Electric utility sector: The electric utility sector consists of privately and publicly owned establishments that generate, transmit, distribute, or sell electricity primarily for use by the public and that meet the definition of an electric utility. Non utility power producers are not included in the electric sector.

Electric zone: A portion of the grid controlled by the independent system operator.

Electrical system energy losses: The amount of energy lost during generation, transmission, and distribution of electricity, including plant and unaccounted for use.

Electricity: A form of energy characterized by the presence and motion of elementary charged particles generated by friction, induction, or chemical change.

Electricity broker: An entity that arranges the sale and purchase of electric energy, the transmission of electricity, and/or other related services between buyers and sellers but does not take title to any of the power sold.

Electricity congestion: A condition that occurs when insufficient transmission capacity is available to implement all of the desired transactions simultaneously.

Electricity demand: The rate at which energy is delivered to loads and scheduling points by generation, transmission, and distribution facilities.

Electricity generation: The process of producing electric energy or the amount of electric energy produced by transforming other forms of energy, commonly expressed in kilowatthours(kWh) or megawatthours (MWh).

Electricity paid by household: The household paid the electric utility company directly for all household uses of electricity (such as water heating, space heating, air-conditioning, cooking, lighting, and operating appliances.) Bills paid by a third party are not counted as paid by the household.

Electricity sales: The amount of kilowatthours sold in a given period of time; usually grouped by classes of service, such as residential, commercial, industrial, and other. "Other" sales include sales for public street and highway lighting and other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

Electricity sales to ultimate customers: Electricity sales that are consumed by the customer and not available for resale. Includes electric sales to end users by third-party owners of behind-the-meter solar photovoltaic systems.

Electricity-only plant: A plant designed to produce electricity only. See also Combined heat and power (CHP) plant.

Energy Affordability: Consumers should be able to pay for their electricity use without being overburdened to meet basic needs.

Energy consumption: The use of energy as a source of heat or power or as a raw material input to a manufacturing process.

Energy deliveries: Energy generated by one electric utility system and delivered to another system through one or more transmission lines.

Energy demand: The requirement for energy as an input to provide products and/or services.

Energy Efficiency: A ratio of service provided to energy input (e.g., lumens to watts in the case of light bulbs). Services provided can include buildings-sector end uses such as lighting, refrigeration, and heating: industrial processes; or vehicle transportation. Unlike conservation, which involves some reduction of service, energy efficiency provides energy reductions without sacrifice of service. May also refer to the use of technology to reduce the energy needed for a given purpose or service.

Energy efficiency, Electricity: Refers to programs that are aimed at reducing the energy used by specific end-use devices and systems, typically without affecting the services provided. These programs reduce overall electricity consumption (reported in megawatthours), often without explicit consideration for the timing of program-induced savings. Such savings are generally achieved by substituting technologically more advanced equipment to produce the same level of end-use services (e.g. lighting, heating, motor drive) with less electricity. Examples include high-efficiency appliances, efficient lighting programs, high-efficiency heating, ventilating and air conditioning (HVAC) systems or control modifications, efficient building design, advanced electric motor drives, and heat recovery systems.

Energy efficient motors: Are also known as "high-efficiency motors" and "premium motors." They are virtually interchangeable with standard motors, but differences in construction make them more energy efficient.

Energy management and control system(EMCS): An energy conservation feature that uses mini/microcomputers, instrumentation, control equipment, and software to manage a building's use of energy for heating, ventilation, air conditioning, lighting, and/or business-related processes. These systems can also manage fire control, safety, and security. Not included as EMCS are time-clock thermostats.

Energy management practices: Involvement, as a part of the building's normal operations, in energy efficiency programs that are designed to reduce the energy used by specific end-use systems. This includes the following EMCS, DSM Program Participation, Energy Audit, and a Building Energy Manager.

Energy Reliability: The ability of a power system to withstand instability, uncontrolled events, cascading failures, or unanticipated loss of system components.

Energy reserves: Estimated quantities of energy sources that are demonstrated to exist with reasonable certainty on the basis of geologic and engineering data (proved reserves) or that can reasonably be expected to exist on the basis of geologic evidence that supports projections from proved reserves (probable/indicated reserves). Knowledge of the location, quantity, and grade of probable/indicated reserves is generally incomplete or much less certain than it is for proved energy reserves. Note: This term is equivalent to "Demonstrated Reserves" as defined in the resource/reserve classification contained in the U.S. Geological Survey Circular 831,1980. Demonstrated reserves include measured and indicated reserves but exclude inferred reserves.

Energy savings: A reduction in the amount of electricity used by end users as a result of participation in energy efficiency programs and load management programs.

Energy Security/Resilience: Uninterrupted availability of energy sources at an affordable price.

Energy service provider: An energy entity that provides service to a retail or end-use customer.

Energy source: Any substance or natural phenomenon that can be consumed or transformed to supply heat or power. Examples include petroleum, coal, natural gas, nuclear, biomass, electricity, wind, sunlight, geothermal, water movement, and hydrogen in fuel cells.

Energy supplier: Fuel companies supplying electricity, natural gas, fuel oil, kerosene, or LPG (liquefied petroleum gas) to the household.

Energy supply: Energy made available for future disposition. Supply can be considered and measured from the point of view of the energy provider or the receiver.

Energy used in the home: For electricity or natural gas, the quantity is the amount used by the household during the365- or 366-day period. For fuel oil, kerosene, and liquefied petroleum gas (LPG), the quantity consists of fuel purchased, not fuel consumed. If the level of fuel in the storage tank was the same at the beginning and end of the annual period, then the quantity consumed would be the same as the quantity purchased.

Energy-consuming sectors: The residential, commercial, industrial, transportation, and electric power sectors of the economy.

Energy-use sectors: A group of major energy-consuming components of U.S. society developed to measure and analyze energy use. The sectors most commonly referred to in EIA are: residential, commercial, industrial, transportation, and electric power.

Electrode: A conductor through which electrons enter or leave an **electrolyte**. **Batteries** and **fuel cells** have a negative electrode (the **anode**) and a positive electrode (the **cathode**).

Electrolysis: A process that uses electricity, passing through an electrolytic solution or other appropriate medium, to cause a reaction that breaks chemical bonds (e.g., electrolysis of water to produce hydrogen and oxygen).

Electron: A stable atomic particle that has a negative charge; the flow of electrons through a substance constitutes electricity.

Emission Standards: Regulatory standards that govern the amount of a given pollutant that can be discharged into the air from a given source.

Endothermic: A chemical reaction that absorbs or requires energy (usually in the form of heat).

Energy: The quantity of work a system or substance is capable of doing, usually measured in **British thermal units** (Btu) or Joules (J).

Energy Content: Amount of energy for a given weight of fuel.

Energy Density: Amount of potential energy in a given measurement of fuel. See **Gravimetric Energy Density** and **Volumetric Energy Density**.

Engine: A machine that converts heat energy into mechanical energy.

Ethanol (CH_3CH_2OH): An alcohol containing two **carbon** atoms. Ethanol is a clear, colorless liquid and is the same alcohol found in beer, wine, and whiskey. Ethanol can be produced from cellulosic materials or by fermenting a sugar solution with yeast.

Exhaust Emissions: Materials emitted into the atmosphere through any opening downstream of the exhaust ports of an engine, including water, particulates, and pollutants.

Exothermic: A chemical reaction that gives off heat.

Fuel: A material used to create heat or power through conversion in such processes as combustion or electrochemistry.

Fuel Cell: A device that produces electricity through an electrochemical process, usually from hydrogen and oxygen.

Fuel Cell Stack: Individual **fuel cells** connected in a series. Fuel cells are stacked to increase voltage.

Fuel Processor: Device used to generate hydrogen from fuels such as **natural gas**, **propane**, **gasoline**, **methanol**, and **ethanol** for use in **fuel cells**.

Gas: Fuel gas such as natural gas, undiluted **liquefied petroleum gases** (vapor phase only), liquefied petroleum gas-air mixtures, or mixtures of these gases.

- **Natural Gas**—Mixtures of hydrocarbon gases and vapors consisting principally of **methane** (CH_4) in gaseous form.
- **Liquefied Petroleum Gases** (LPG)—Any material composed predominantly of any of the following **hydrocarbons** or mixtures of them: propane, propylene, butanes (normal butane or isobutane) and butylenes.
- **Liquefied Petroleum Gas-Air Mixture**—Liquefied petroleum gases distributed at relatively low pressures and normal atmospheric temperatures that have been diluted with air to produce desired heating value and utilization characteristics.

Graphite: Mineral consisting of a form of **carbon** that is soft, black, and lustrous and has a greasy feeling. Graphite is used in pencils, crucibles, lubricants, paints, and polishes.

Greenhouse Effect: Warming of the Earth's atmosphere due to gases in the atmosphere that allow solar radiation (visible, ultraviolet) to reach the Earth's atmosphere but do not allow the emitted infrared radiation to pass back out of the Earth's atmosphere.

Greenhouse Gas (GHG): Gases in the Earth's atmosphere that contribute to the **greenhouse effect**.

Heat Exchanger: Device (e.g., a radiator) that is designed to transfer heat from the hot coolant that flows through it to the air blown through it by the fan.

Heating Value (TOTAL): The number of British thermal units (**Btu**) produced by the **combustion** of one cubic foot of gas at constant pressure when the products of combustion are cooled to the initial temperature of the gas and air, when the **water** vapor formed during combustion is condensed, and when all the necessary corrections have been applied.

- **Lower (LHV)**—The value of the heat of combustion of a fuel measured by allowing all products of **combustion** to remain in the gaseous state. This method of measure does not take into account the heat energy put into the vaporization of water (heat of vaporization).
- **Higher (HHV)—**The value of the heat of combustion of a fuel measured by reducing all of the products of combustion back to their original temperature and condensing all water vapor formed by combustion. This value takes into account the heat of vaporization of water.

Hydrocarbon (HC): An organic compound containing carbon and hydrogen, usually derived from fossil fuels, such as petroleum, **natural gas**, and coal.

Hydrogen (H_2): Hydrogen (H) is the most abundant element in the universe, but it is generally bonded to another element. Hydrogen gas (H_2) is a diatomic gas composed of two hydrogen atoms and is colorless and odorless. Hydrogen is flammable when mixed with **oxygen** over a wide range of concentrations.

Hydrogen-Rich Fuel: A fuel that contains a significant amount of **hydrogen**, such as gasoline, diesel fuel, **methanol** (CH_3OH), **ethanol** (CH_3CH_2OH), **natural gas**, and coal.

Kilowatt (kW): A unit of power equal to about 1.34 horsepower or 1,000 watts.

Liquefied Hydrogen (LH_2): Hydrogen in liquid form. Hydrogen can exist in a liquid state but only at extremely cold temperatures. Liquid hydrogen typically has to be stored at -253°C (-423°F). The temperature requirements for liquid hydrogen storage necessitate expending energy to compress and chill the hydrogen into its liquid state.

Liquefied Natural Gas (LNG): Natural gas in liquid form. Natural gas is a liquid at -162°C (-259°F) at ambient pressure.

Liquefied Petroleum Gas (LPG): Any material that consists predominantly of any of the following hydrocarbons or mixtures of **hydrocarbons**: **propane**, propylene, normal butane, isobutylene, and butylenes. LPG is usually stored under pressure to maintain the mixture in the liquid state.

Megawatt (MW): A unit of power equal to one million watts or 1,000 kilowatts.

Membrane: The separating layer in a **fuel cell** that acts as **electrolyte** (an ion-exchanger) as well as a barrier film separating the gases in the **anode** and **cathode** compartments of the fuel cell.

Methanol (CH_3OH): An alcohol containing one carbon atom. It has been used, together with some of the higher alcohols, as a high-octane gasoline component and is a useful automotive fuel.

Miles Per Gallon Equivalent (MPGE): Energy content equivalent to that of a gallon of gasoline (114,320 **Btu**).

Molten Carbonate Fuel Cell (MCFC): A type of **fuel cell** that contains a molten carbonate **electrolyte**. Carbonate ions (CO_3^{-2}) are transported from the **cathode** to the **anode**. Operating temperatures are typically near 650°C.

Natural Gas: A naturally occurring gaseous mixture of simple **hydrocarbon** components (primarily **methane**) used as a fuel.

Nitrogen (N_2): A diatomic colorless, tasteless, odorless gas that constitutes 78% of the atmosphere by volume.

Nitrogen Oxides (NO_x): Any chemical compound of nitrogen and **oxygen**. Nitrogen oxides result from high temperature and pressure in the **combustion chambers** of automobile engines and other power plants during the combustion process. When combined with **hydrocarbons** in the presence of sunlight, nitrogen oxides form smog. Nitrogen oxides are basic air pollutants; automotive exhaust emission levels of nitrogen oxides are regulated by law.

Nuclear energy: is energy stored in the nucleus of an atom—the energy that holds the nucleus together. Large amounts of energy can be released when the nuclei are combined or split apart.

Polymer Electrolyte Membrane (PEM): A fuel cell incorporating a solid polymer membrane used as its **electrolyte**. Protons (H^+) are transported from the anode to the cathode. The operating temperature range is generally 60°C–100°C.

Polymer Electrolyte Membrane Fuel Cell (PEMFC or PEFC): A type of acid-based **fuel cell** in which the transport of **protons** (H^+) from the **anode** to the **cathode** is through a solid, aqueous membrane impregnated with an appropriate acid. The **electrolyte** is a called a **polymer electrolyte membrane (PEM)**. The fuel cells typically run at low temperatures (<100°C).

Radiant energy: is electromagnetic energy that travels in transverse waves. Radiant energy includes visible light, x-rays, gamma rays, and radio waves. Light is one type of radiant energy. Sunshine is radiant energy, which provides the fuel and warmth that make life on earth possible.

Reactor: Device or process vessel in which chemical reactions (e.g., catalysis in **fuel cells**) take place.

Reformate: Hydrocarbon fuel that has been processed into hydrogen and other products for use in **fuel cells**.

Reformer: Device used to generate hydrogen from fuels such as **natural gas**, **propane**, **gasoline**, **methanol**, and **ethanol** for use in **fuel cells**.

Reforming: A chemical process in which hydrogen-containing fuels react with steam, **oxygen**, or both to produce a hydrogen-rich gas stream.

Reformulated Gasoline: Gasoline that is blended so that, on average, it reduces volatile organic compounds and air toxics emissions significantly relative to conventional gasolines.

Regenerative Fuel Cell: A **fuel cell** that produces electricity from hydrogen and oxygen and can use electricity from solar power or some other source to divide the excess water into oxygen and hydrogen fuel to be re-used by the fuel cell.

Renewable Energy: A form of energy that is never exhausted because it is renewed by nature (within short time scales; e.g., wind, solar radiation, hydro power).

Solid Oxide Fuel Cell (SOFC): A type of **fuel cell** in which the **electrolyte** is a solid, nonporous metal oxide, typically zirconium oxide (ZrO_2) treated with Y_2O_3, and O^{-2} is transported from the **cathode** to the **anode**. Any CO in the reformate gas is oxidized to CO_2 at the anode. Temperatures of operation are typically 800°C–1,000°C.

Steam Reforming: The process for reacting a **hydrocarbon** fuel, such as natural gas, with steam to produce hydrogen as a product. This is a common method for bulk hydrogen generation.

Thermal energy: or heat, is the energy that comes from the movement of atoms and molecules in a substance. Heat increases when these particles move faster. Geothermal energy is the thermal energy in the earth.

Turbine: Machine for generating rotary mechanical power from the energy in a stream of fluid. The energy, originally in the form of head or pressure energy, is converted to velocity energy by passing through a system of stationary and moving blades in the turbine.

Turbocharger: A device used for increasing the pressure and **density** of a fluid entering a **fuel cell** power plant using a compressor driven by a turbine that extracts energy from the exhaust gas.

Turbocompressor: Machine for compressing air or other fluids (**reactant** if supplied to a **fuel cell** system) in order to increase the reactant pressure and concentration.

Water (H_2O): A colorless, transparent, odorless, tasteless liquid compound of **hydrogen** and **oxygen**. The liquid form of steam and ice. Fresh water at **atmospheric pressure** is used as a standard for describing the relative **density** of liquids, the standard for liquid capacity, and the standard for fluid flow. The melting and

boiling points of water are the basis for the **Celsius** temperature system. Water is the only byproduct of the combination of hydrogen and oxygen and is produced during the burning of any **hydrocarbon**. Water is the only substance that expands on freezing as well as by heating and has a maximum density at 4°C.

Watt (W): A unit of power equal to one Joule of work performed per second; 746 watts is the equivalent of one horsepower. The watt is named for James Watt, Scottish engineer (1736–1819) and pioneer in steam engine design.

ACRONYMS

AC - Alternating Current

AFC - Alkaline Fuel Cell

ANL - Argonne National Laboratory

ANSI - American National Standards Institute

APU - Auxiliary Power Unit

ASME - American Society of Mechanical Engineers

ASNT - American Society for Nondestructive Testing

BOCA - Building Officials Code Administration

CaFCP - California Fuel Cell Partnership

CARB - California Air Resources Board

CGA - Compressed Gas Association

CSA - Canadian Standards Association

DC - Direct Current

DMFC - Direct Methanol Fuel Cell

DOD - Department of Defense

DOE - Department of Energy

DOT - Department of Transportation

EERE - Office of Energy Efficiency and Renewable Energy (an office within the U.S. Department of Energy)

FCHEA - Fuel Cell and Hydrogen Energy Association

FCV - Fuel Cell Vehicle

FCT - Fuel Cell Technology (Program within **EERE**)

FMEA - Failure Mode and Effects Analysis

FY - Fiscal Year

GHG - Greenhouse Gas

HAHC - Hydrogen Ad Hoc Committee

HCSCC - Hydrogen Codes and Standards Coordinating Committee

HTAP - Hydrogen Technical Advisory Panel

ICBO - International Conference of Building Officials

ICC - International Code Council

IEC - International Electrochemical Commission

IEEE - Institute of Electrical & Electronics Engineers

IFGC - International Fuel Gas Code

IRC - International Residential Code

ISA - Instrument Society of America

ISO - International Organization for Standardization

JIGA - Japan Industrial Gases Association

LANL - Los Alamos National Laboratory

LFL - Lower Flammability Limit

LHV - Lower Heating Value

MCFC - Molten Carbonate Fuel Cell

MEA - Membrane/Electrode Assembly

MSDS - Material Safety Data Sheet

NAS - National Academy of Sciences

NES - National Evaluation Services

NFPA - National Fire Protection Association

NGV - New Generation of Vehicles

NGVC - Natural Gas Vehicle Coalition

NIST - National Institute of Standards and Technology

NHA - National Hydrogen Association (NHA merged with the U.S. Fuel Cell Council to form FCHEA in 2011)

NREL - National Renewable Energy Laboratory

OSHA - Occupational Safety and Health Administration

PAFC - Phosphoric Acid Fuel Cell

PATH - Partnership for Advancing the Transition to Hydrogen

PDA - Personal Digital Assistant

PEC - Photoelectrochemical

PEM - Polymer Electrolyte Membrane / Proton Exchange Membrane

PEMFC - Polymer Electrolyte Membrane Fuel Cell

PNNL - Pacific Northwest National Laboratory

PV - Photovoltaic

R&D - Research & Development

SAE - Society of Automotive Engineers

SBCCI - Southern Building Code Congress International

SBIR - Small Business Innovations Research

SMR - Steam Methane Reforming

SOFC - Solid Oxide Fuel Cell

STTR - Small Business Technology Transfer Program

SUV - Sport Utility Vehicle

SWNT - Single Wall Nanotube

TC - Technical Committee

UBC - Uniform Building Committee

UFL - Upper Flammability Limit

UL - Underwriter's Laboratory

USFCC - U.S. Fuel Cell Council (USFCC merged with the National Hydrogen Association to form FCHEA in 2011)

WHEC - World Hydrogen Energy Conference