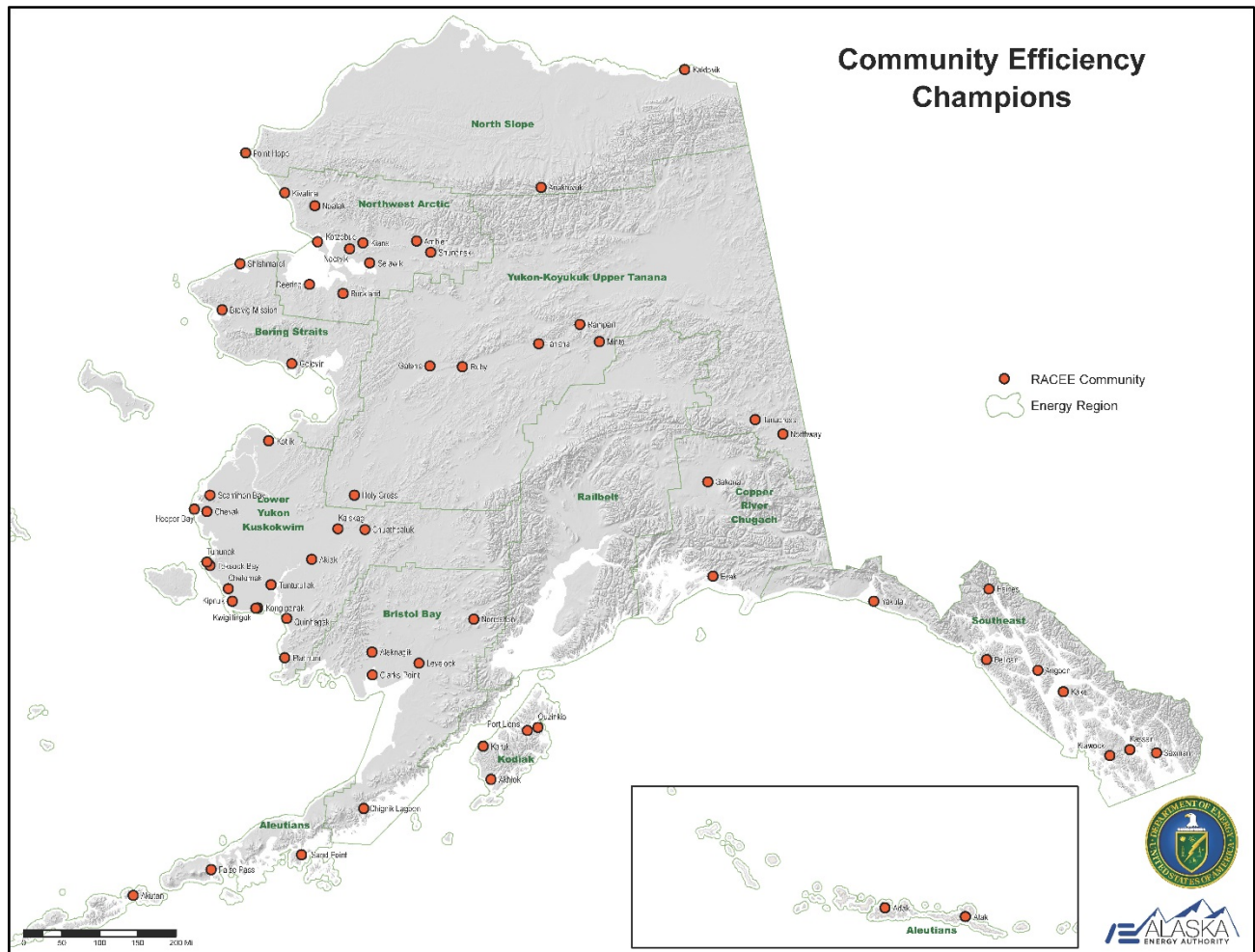


# Remote Alaskan Communities Energy Efficiency Competition (RACEE)

## Technical Assistance Guide



March 2016

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## How to Use this Guide

The RACEE Competition developed this list of TA ideas and resources to explain DOE and Alaska Energy Authority resources. Use this Guide to help you brainstorm technical assistance ideas to include as possibilities in your TA application. Please note that requests for specific TA providers will not be considered during the Merit Review. After communities are selected to receive TA based on the content of their applications, DOE will make decisions on how to fulfill RACEE Community Efficiency Champions' TA needs.

There may be additional available resources that are not mentioned in this Guide. This Guide shows the types of services to meet each kind of potential need. All TA resources are subject to contacting. The TA Guide is meant to inspire communities to consider meaningful TA actions to achieve their energy efficiency reduction goals of 15 percent by 2020.

## Technical Assistance Provider Network

The Alaska Energy Authority's project managers will manage the delivery of technical assistance to Community Energy Champions (CEC) on energy efficiency project development, including overseeing building inventories, data collection and/or feasibility studies, analysis, and planning. Specific Community Efficiency Champion project managers will collaborate with communities to manage project logistics and communications, and facilitate the project management team for each Community Efficiency Champion.

The Community Efficiency Champion may begin this process with a clear, data-driven understanding of energy savings opportunities and how best to realize them, or starts only with a general sense that efficiency is a good idea but has no definitive plan. Regardless, the AEA project manager will ensure an efficient, timely, and appropriate application of available technical assistance resources.

Additionally, AEA project managers, with the help of regional efficiency liaisons, will work with local leadership to determine potential community financial contribution to the project. In addition, some communities will not successfully compete for the RACEE implementation grants so AEA project managers will also work with the community to determine the degree of ability to assume debt for a financed project. The project manager's goal is the same for each Community Efficiency Champion: for each community to be well positioned to successfully submit a grant or loan application for implementing the project developed through this competition.

Technical assistance deliverables for each plan may include: project scope, energy baseline, cost estimate, project business plan, management team that addresses any organizational issues between tribes in a community or between a village and a tribe living within, design team, financing plan, and permitting strategy.

Eligible technical assistance will include baseline data collection, monitoring and analysis, community training and education activities, feasibility planning, policy and regulatory planning, tools, modeling, engineering and design assistance, and other project development assistance.

This Guide is not by any means a comprehensive representation of all available energy-related technical assistance resources in or for Alaska. For the purposes of RACEE, other activities and providers may be eligible.

AEA will rely exclusively on government-to-government partnerships for the delivery of technical assistance in Phase Two as a time-saving measure, which is necessary due to the project's challenging timeline. The Alaska-specific providers are primarily those with which AEA has the ability to enter into a Cooperative Agreement or Reimbursable Services Agreement.

The role of regional liaisons is a continuation of work through AEA's regional energy planning efforts. Those efforts have built significant capacity among the providers and the RACEE Competition can capitalize on that for more effective, efficient delivery of technical assistance. It has been through the course of regional energy planning that energy efficiency has matured as an attractive energy cost reduction strategy. Efficiency projects have risen to the top of nearly every energy project priority list throughout rural Alaska communities and regions. The next steps for all the energy planners is to help the communities in their regions first develop specific projects prioritized in the plans and then identify realistic financing mechanisms for implementing them.

Alaska Regional Development Organizations, or ARDORs, have in many parts of the state led AEA's regional energy planning process and will similarly be relied upon to serve the regional liaison role during the RACEE competition. In the rural Interior region of the state there is no ARDOR. Tanana Chiefs Conference (TCC) is instead the regional energy planning lead, and will likewise serve as the regional liaison. Likewise, on the North Slope there is no ARDOR; the North Slope Borough has instead been at the helm of their energy planning efforts and will serve as the RACEE regional liaison as well.

## **Regional Liaisons:**

There are nine regional liaisons across Alaska that can work to advance the collective activities of the Community Efficiency Champions. Regional liaisons will work closely with the AEA project managers to develop efficiency projects to the point they can be implemented with financing. In some circumstances the regional liaison may play a more active role in guiding the Community Efficiency Champion through the project development process. Regional liaisons will assist with data collection and feasibility analysis where appropriate, and will be the primary point of contact between the community and visiting technical assistance teams on site visits regardless of whether the project manager travels or not.

**Alaska Village Council Presidents (AVCP):** Originally organized in 1964 to facilitate the passage of the Alaska Native Claims Settlement Act (ANCSA), the Association of Village Council Presidents is a tribal consortium of 56 Alaska Native Villages and is identified as the ANCSA Native Association for the southwest coast, all villages in the Bethel area, including all villages on the Lower Yukon River and the Lower Kuskokwim River. AVCP has grown to be a regional, non-profit Alaska Native organization that advocates for self-determination and the protection and enhancement of the Yup'ik, Cup'ig and Cup'ik people of the AVCP region.

AVCP may subcontract to Nuvista Light & Electric Cooperative, the energy planning lead organization for the Yukon Kuskowkim region. Nuvista is a non-profit electric cooperative that seeks to reduce energy costs and provide renewable sources of energy to the people of western Alaska. Founded and led by non-profit, tribal, energy organizations and Alaska Native stakeholders in the Yukon-Kuskokwim Delta region, Nuvista is improving the energy economics in rural Alaska by aiming to attain affordable, long-term energy sustainability and self-sufficiency.

Nuvista brings relevant expertise to the RACEE project through their pilot project to develop a bankable, aggregated, multi-building retrofit project in a rural Southwest community. The project is in the funding feasibility stage and hoping for launch in summer 2016.

**Copper Valley Development Association (CVDA):** The Copper Valley Development Association facilitates partnerships to improve the quality of life in Alaska's Copper Valley through economic development while protecting Alaska's natural and cultural resources. CVDA partners with AEA on regional energy planning and maintains lists of energy efficiency and renewable energy projects in the Copper River region. CVDA works to reduce energy costs and their impact on transportation, goods and services for a more affordable Copper River Region.

**Kawerak, Inc.:** Kawerak is the regional non-profit corporation providing services throughout the Bering Straits Region and is the designated ARDOR. Kawerak's organizational goal is to assist Alaska Native people and governing bodies to take control of their future. With programs ranging from education to transportation, and natural resource management to economic development, Kawerak seeks to improve the Region's social, economic, educational, cultural and political conditions.

Kawerak may subcontract to Bering Strait Development Company (BSDC) whose construction division is a full-service general contractor serving the Bering Strait region surrounding Nome with experience in single and multi-family housing, commercial buildings and industrial construction and renovation. BSDC has in-house expertise in electrical, plumbing, and heating systems to complement general construction activities. BSDC has developed a specialty in energy efficiency and renewable energy installations throughout northern and western Alaska. BSDC has certified energy auditors on staff and installs renewable energy products such as wind turbines, solar photovoltaic panels, and solar hot water installations.

**North Slope Borough:** The North Slope Borough is committed to having healthy communities, economically, spiritually and culturally. The Borough works with the tribes, cities, corporations, schools, and businesses to support a strong culture, encourage families and employees to choose a healthy lifestyle, and sustain a vibrant economy.

The North Slope Borough partners with AEA on regional energy planning efforts with the goal to develop a detailed and cohesive document that presents a sustainable energy strategy that can reduce energy costs in the region.

**Northwest Arctic Borough (NAB):** The Northwest Arctic Borough Economic Development Department promotes economic enhancement, research and development consistent with the traditional culture and values of the people of the region. The promotion occurs through identification of programs and services that will encourage such development, coordination with other agencies and governments within and outside the region, direct administration of grant, loan and marketing programs, and the collection and distribution of employment, education and other demographic data.

**Prince William Sound Economic Development District (PWSEDD):** Prince William Sound Economic Development District is an ARDOR whose mission is to serve as a forum for the discussion of regional economic issues and to foster economic growth and responsible development in the communities of Prince William Sound.

PWSEDD serves the communities of Chenega Bay, Cordova, Tatitlek, Valdez and Whittier and is the lead on AEA's regional energy planning efforts for the Chugach region. The regional energy plan is working to identify ways to reduce energy costs and decrease reliance on diesel for power generation.

**Southeast Conference:** Southeast Conference is the designated ARDOR and the federally-designated Economic Development District for Southeast Alaska. The organization is a regional, membership-based non-profit corporation that advances the collective interest of the people, communities and businesses in Southeast Alaska. Members include municipalities, native

corporations and village councils, regional and local businesses, civic organizations and individuals throughout the region.

The organization's goal is to support policies that promote strong economies, healthy communities, and a quality environment for Southeast Alaska. The Southeast Conference served as the lead entity for AEA's southeast Alaska energy planning efforts.

The Southeast Conference may subcontract to Renewable Energy Alaska Project (REAP). Through their work as the Sustainable Southeast Partnership's Regional Energy Catalyst (SSP), REAP is working with rural southeast communities to develop awareness about building efficiency opportunities and overcome barriers to implementing efficiency projects. The SSP is a network of organizations working together to build resilient communities with a focus on energy independence, local food, economic development and natural resources.

**Southwest Alaska Municipal Conference (SWAMC):** SWAMC is the designated ARDOR for Southwest Alaska and uses regional development strategies, local knowledge, and collaboration to encourage the formation of regional development organizations to prepare and implement regional development strategies.

Designated as an Economic Development District, SWAMC compiles a tri-annual Comprehensive Economic Development Strategy (CEDs) for the Southwest region and provides funding partnerships for community development projects. SWAMC assistance includes economic development planning, tourism development, business planning and feasibility studies, assistance with grants and proposals, and assistance with promotional and marketing efforts and is the lead on AEA's energy planning efforts for Kodiak, Bristol Bay and the Aleutians.

**Tanana Chiefs Conference (TCC):** TCC is organized as Dena'Nena' Henash, or "Our Land Speaks"; an Alaska Native non-profit corporation, charged with advancing Tribal self-determination and enhancing regional Native unity. TCC provides services while balancing traditional Athabascan and Alaska Native values with modern demand by providing a unified voice in advancing tribal governments through the promotion of physical and mental wellness, education, socioeconomic development, and the culture of the Interior Alaska Native People.

TCC works closely with Tribes, partner organizations, and state and federal governments to find clean and affordable energy solutions for TCC communities. The organization's focus is predominately on energy efficiency, renewable energy, and efficient building standards. TCC has served as the lead on AEA's regional energy planning efforts for Interior Alaska.

## Questions about the TA Applications?

- Send an email to: [AlaskaCompetition@hq.doe.gov](mailto:AlaskaCompetition@hq.doe.gov) or by fax at 240-562-1640.
- Read the RACEE Website to download the NOTA Phase 2 PowerPoint presentation.
- <http://energy.gov/eere/remote-alaskan-communities-energy-efficiency-competition>
- Submit TA applications online through the **online application portal** (EERE Exchange), via email at [AlaskaCompetition@hq.doe.gov](mailto:AlaskaCompetition@hq.doe.gov), and via fax at 240-562-1640. Please call Steve Palmeri at 720-356-1741 or email to let DOE know you sent a fax.
- Or speak with your regional contacts:

Organization	Main Phone #	Website
Alaska Village Council Presidents	(907)543-7300	<a href="http://www.avcp.org/">http://www.avcp.org/</a>
Copper Valley Development Association	(907) 822-5001	<a href="http://www.coppervalley.org/home">http://www.coppervalley.org/home</a>
Kawerak	(907) 443-5231	<a href="http://www.kawerak.org/index.html">http://www.kawerak.org/index.html</a>
North Slope Borough	(907) 852-2611	<a href="http://www.north-slope.org/contact">http://www.north-slope.org/contact</a>
Northwest Arctic Borough	(907) 442-2500	<a href="http://www.nwabor.org/">http://www.nwabor.org/</a>
Prince William Sound Economic Development District	(907) 222-2440	<a href="http://www.pwsedd.org/">http://www.pwsedd.org/</a>
Southeast Conference	(907) 586-4360	<a href="http://www.seconference.org/">http://www.seconference.org/</a>
Southwest Alaska Municipal Conference	(907) 562-7380	<a href="http://swamc.org/">http://swamc.org/</a>
Tanana Chiefs Conference	(907) 452-8251	<a href="https://www.tananachiefs.org/">https://www.tananachiefs.org/</a>

## Technical Assistance Projects

Please use the following two charts as a guide to explore examples of Technical Assistance (TA) activities and examples of providers for the RACEE Competition. This Guide is not exhaustive and other activities and providers may be relevant to the RACEE Competition. More detail on organizations and specific projects or activities are available in the narratives that follow these charts. These ideas are intended to inspire communities and providers to submit robust TA applications no later than 5 pm ET on March 31, 2016.

**Browse TA Providers by Project Type (Buildings, Outdoor Lighting, Water/Sewer/Wastewater and Supply side):**

Technical Assistance Provider	Assistance Type	Buildings	Outdoor Lighting	Water/Sewer/Waste Water	Supply Side Efficiency
Alaska Center for Energy & Power	Feasibility and Analysis				x
Alaska Energy Authority	Combined Heat and Power Feasibility & Design				x
	Community Energy Consumption & Project Evaluation Modeling	x	x	x	x
	Direct TA	x	x	x	x
	Distribution Systems Feasibility & Design				x
	Energy Project Business & Finance Planning	x	x	x	x
	Energy Project Economic Analysis	x	x	x	x
	Non-Residential Building/Facility Energy Audits	x	x		x
	Geothermal Renewable Energy Integration (Heat Pumps)				x
	Power House Operations & Maintenance Plan Development				x
	Power House Upgrade Feasibility & Design				x
	Solar Renewable Energy Integration				x
	Strategic Energy Planning	x	x	x	x
Alaska Housing Finance Corporation (AHFC)	Building and Community Energy Consumption & Project Evaluation Modeling	x			
	Building Monitoring Software	x	x		
	Energy Efficiency Project Cash Flow Calculator	x	x	x	



	Technical Assistance Type	Buildings	Outdoor Lighting	Water/ Sewer/ Waste Water	Supply Side
	Commercial Building Energy Audit	x			
	Direct TA	x			
	Home Energy Assessment Software	x			
	Housing Needs Assessment	x			
	Residential Energy Appraisal Calculator	x			
	Residential Data Collection, Feasibility, Analysis, and Design (via local/regional housing authorities)	x			
	Strategic Energy Management Manual	x			
	Efficient Building Design Prototype & Retrofit Best Practices (via Cold Climate Housing Research Center)	X			
	Alaska Sea Grant Marine Advisory Program	Seafood processor plant energy audits, operations & maintenance, business plan development	x		
Alaska Village Council Presidents	Energy Data Collection & Analysis	x			
Copper Valley Development Association	Energy Data Collection & Analysis	x			
DOE Office of Indian Energy	Climate Change Resiliency	x			
	Direct Technical Assistance	x	x		x
	Strategic Energy Planning	x			

DOE Office of Energy Efficiency and Renewable Energy	Technical Assistance Type	Buildings	Outdoor Lighting	Water/ Sewer/ Waste Water	Supply Side
	Streetlights		x		
	Combined Heat and Power Technical Assistance Partnerships				x
	Geothermal Renewable Energy Integration				x
	Home Energy Score Assessment	x			
	Software Tools	x			
	Solar Renewable Energy Integration				x
	Strategic Energy Planning	x			
	Strategy Development Pumps/ Motors/ Drives				x
	Water & Waste Water			x	
Kawerak, Inc	Energy Data Collection & Analysis	x			
North Slope Borough		x			
Northwest Arctic Borough		x			
Prince William Sound Economic Development District		x			
Southeast Alaska Conference		x			
Southwest Alaska Municipal Conference		x			
Tanana Chiefs Conference		x			
UAA Business Enterprise Institute Center for Economic Development		Business & Finance Planning	x	x	x
Village Safe Water	Facility audits, Feasibility & Design, Operations & Maintenance	x		x	x

# Technical Assistance Activities

Browse TA Providers by 7 Activity Types:

Provider	Technical Assistance Type	Data Collection and Analysis	Feasibility Analysis	Business Planning	Project Management	Economic/Cost Analysis	Project Planning, Development, and Design	Training and Education
Alaska Center for Energy & Power	Feasibility and Analysis	x	x					
Alaska Energy Authority	Combined Heat and Power Feasibility & Design	x	x					
	Community Energy Consumption & Project Evaluation Modeling		x					
	Direct Technical Assistance	x	x	x	x	x	x	x
	Distribution Systems Feasibility & Design		x				x	
	Energy Project Business & Finance Planning			x		x	x	
	Energy Project Economic Analysis		x			x		
	Geothermal Renewable Energy Integration (Heat Pumps)		x				x	x
	Non-Residential Building/Facility Energy Audits	x	x					
	Power House Operations & Maintenance Plan Development		x				x	
	Power House Upgrade Feasibility & Design	x						x
	Solar Renewable Energy Integration							x
	Strategic Energy Planning						x	x

Provider	Technical Assistance Type	Data Collection and Analysis	Feasibility Analysis	Business Planning	Project Management	Economic/Cost Analysis	Project Planning, Development, and Design	Training and Education
Alaska Housing Finance Corporation	Building and Community Energy Consumption & Project Evaluation Modeling	x		x		x		
Alaska Housing Finance Corporation Alaska Native Tribal Health Consortium, Facility audits, feasibility & design, and O&M plan development	Building Monitoring Software	x					x	x
	Cash Flow Calculator	x						
	Commercial Building Energy Assessment	x				x	x	
	Direct Technical Assistance	x		x	x	x	x	x
	Home Energy Assessment Software	x					x	
	Housing Needs Assessment	x					x	
	Residential Energy Appraisal Calculator	x	x	x		x		
	Strategic Energy Management Practices			x	x			
	Efficient Building Prototype Design & Retrofit Best Practices						x	
	Residential Data Collection, Feasibility, Analysis, and Design (via local/regional housing authorities)	x	x			x	x	
	Building/Facility Audits, Feasibility & Design, and O&M Plan Development	x	x				x	x
Alaska Sea Grant Marine Advisory Program	Seafood processor facility audits & operations plans	x	x	x				
Alaska Village Council Presidents	Regional Liaison	x						
Copper Valley Development Association	Regional Liaison	x						

Provider	Technical Assistance Type	Data Collection and Analysis	Feasibility Analysis	Business Planning	Project Management	Economic/Cost Analysis	Project Planning, Development, and Design	Training and Education
DOE Office of Energy Efficiency and Renewable Energy DOE Office of Indian Energy	Calculate Cost Savings Potential of Outdoor Lighting Retrofits		x		x	x	x	
	Combined Heat and Power Technical Assistance Partnerships		x				x	
	Geothermal Renewable Energy Integration						x	x
	Home Energy Score Assessment		x				x	
	Software Tools		x	x				
	Solar Renewable Energy Integration: NREL		x	x	x	x	x	x
	Strategic Energy Planning	x					x	x
	Strategy Development (Pumps, Motors, and Drives)	x					x	
	Water and Waste Water	x					x	
DOE Office of Indian Energy	Climate Change Resiliency			x	x	x	x	
	Direct Technical Assistance	x	x		x		x	
	Strategic Energy Planning	x						x
Kawerak, Inc.	Regional Liaison	x						
North Slope Borough	Regional Liaison	x						
Northwest Arctic Borough	Regional Liaison	x						
Prince William Sound Economic Development District	Regional Liaison	x						
Southeast Alaska Conference	Regional Liaison	x						
Southwest Alaska Municipal Conference	Regional Liaison	x						

Tanana Chiefs Conference	Regional Liaison	x						
UAA Business Enterprise Institute Center for Economic Development and AEA,	Business & Finance Planning			x				

## Technical Assistance Providers

### Alaska Center for Energy and Power (ACEP)

#### **Feasibility and Analysis:**

The Alaska Center for Energy and Power is an applied energy research program based at the University of Alaska Fairbanks. ACEP provides leadership for addressing issues that arise when integrating renewable power generation into community grid system. ACEP's role in Phase 2 of RACEE could be to provide technical assistance regarding the appropriate use of different energy technologies in relation to diesel efficiency, powerhouse upgrades, the integration of renewable generating technology, energy storage systems, or combined heat and power.

**Data Collection and Analysis:** ACEP specializes in the collection and management of technical performance data collected from remote and isolated energy systems and offers a host of services that include data collection, quality assurance, data analysis, data storage, data service.

### Alaska Energy Authority (AEA)

**Combined Heat and Power Feasibility & Design:** Currently, Combined Heat and Power (CHP) screening is conducted through AEA and the Northwest CHP Technical Assistance Partnership ([northwestchptap.org](http://northwestchptap.org)). A community or facility with interest in CHP should contact AEA to gather information for a screening analysis. A screening analysis will evaluate monthly and annual electrical and heat usage to determine if there is a potential CHP project for the site. If a screening analysis is positive, AEA and the Northwest CHP Technical Assistance Partnership will work with the entity to identify funding for a feasibility study, the next step in the project development.

**Community Energy Consumption & Project Evaluation Modeling:** The Alaska Energy Authority has created a community energy consumption modeling tool for the Alaska Affordable Energy Strategy that is currently in beta testing. This tool will complement existing project evaluation tools.

**Direct Technical Assistance:** AEA has several programs that provide energy technical assistance to communities. The Circuit Rider small utility maintenance program provides eligible utilities with technical assistance to improve the efficiency, safety, and reliability of their power systems and helps reduce the risk and severity of emergency conditions. This program is available for Alaska communities with a population less than 2,000. Utilities must have Supervisory Control and Data Acquisition (SCADA) systems must be available and demonstrate a need for assistance with operations maintenance and utility training and the power plant operator and/or utility staff must be available for training and consultation during the time of the visit. Power plant operators must maintain written performance logs between visits. Circuit rider assistance may include one or more visits to the community whose utility is selected to receive assistance or it may be limited to assistance provided telephonically or by electronic mail. Assistance includes review of and recommendations to improve the system condition and system operations and maintenance, training utility personnel, and performing, or assisting utility personnel in their performance of, minor maintenance and repairs.

AEA also has programs that provide technical assistance with project development for various technologies, assistance with reporting to the Power Cost Equalization program for eligible utilities, training of power plant and bulk fuel operators, and general community assistance to connect communities with the most appropriate resources to meet their energy needs.

Additional direct technical assistance is offered by AEA's energy efficiency team. This TA is focused on helping businesses and communities navigate the process of developing and/or implementing an energy efficiency project in non-residential buildings.

**Distribution Systems Feasibility & Design:** AEA has been building, upgrading and maintaining rural power systems in small Alaska communities for decades. AEA engineers and contractors are available to help identify energy savings opportunities through supply-side efficiency improvements.

**Energy Project Business & Finance Planning:** AEA will work with utility managers and, where appropriate, their governing bodies to help the utility set appropriate rates for different customer classes for both electric and heat (if applicable).

**Energy Project Economic Analysis:** AEA has three economists on staff and five additional economic firms on contract to conduct evaluation of energy projects.

**Geothermal Technical Assistance:** AEA's geothermal program supports projects for geothermal development for power generation, direct use, and heat pumps and assists in identifying potential resources.

**Non-Residential Buildings/Facility Energy Audits:** AEA will facilitate the collection of critical baseline data and preliminary analysis of building energy use obtained through building energy audits. This information is necessary for accurately exploring the best energy saving opportunities in residential and non-residential buildings in the communities.

**Power House Operations & Maintenance Plan Development:** AEA will provide operations and maintenance plans tailored to communities based on their unique power systems and the

availability of skilled technicians within the community. The Operations & Maintenance plan will include basic service schedules for all powerhouse assets as well as proposed training for powerhouse operators and clerks to support a stable and sustainable utility.

**Power House Upgrade Feasibility & Design:** AEA has been building, upgrading and maintaining rural power systems in small Alaska communities for decades. AEA engineers and contractors are available to help identify energy savings opportunities through supply-side efficiency improvements.

**Solar Energy Technical Assistance:** AEA provides solar energy information, references, resources, and technical assistance, and shares information about solar project issues like microgrid phase imbalance. AEA has formed an Alaska Solar Working Group to share information and track the performance of solar projects in Alaska.

**Strategic Energy Planning:** AEA has funded regional energy plans in ten regions of the state and served in an advisory capacity for two other regional energy plans funded with non-AEA resources. These plans are intended to be useful, practical resources for both AEA itself and the regional and local stakeholders who have been involved in their development. They serve as a solid base for project development and implementation at the local and regional levels throughout the state.

## **Alaska Housing Finance Corporation**

**Building and Community Energy Consumption & Project Evaluation Modeling:** The Alaska Housing Finance Corporation manages the Alaska Retrofit Information System (ARIS), Alaska's sole building energy use database for both residential and commercial buildings. ARIS interfaces with AkWarm, Alaska's building energy modeling software. Both tools may be used by qualified energy auditors, energy managers, and other professionals to assess the potential energy savings opportunities garnered through building efficiency improvements.

**Building Monitoring Software:** AHFC has developed building monitoring software, and can provide technical assistance on decisions of what and to monitor, along with expertise in analysis and troubleshooting.

**Cash Flow Calculator:** AHFC's Cash Flow Calculator is a valuable tool for assessing project cash flow, economics and determining the threshold for bankability.

**Commercial Building Energy Assessment:** AkWarm is a tool for builders, designers, energy auditors, lenders and building owners. The software can be used for energy design, retrofit, or to determine an energy use index.

**Direct Technical Assistance:** AHFC offers two broad categories of technical assistance for energy efficiency projects in non-residential buildings and facilities. This TA covers project development and ongoing energy management, including but not limited to consultations on procuring professional services such as energy auditors, a commissioning agency or construction management team, measurement & verification, tools, calculators and manuals,



and advice on setting standards, deliverables, and expectations for developers or contractors in executing energy efficiency retrofits.

**Home Energy Assessment Software:** Alaska has a 25-year-old home energy rating system, with more than 50 qualified energy raters. These professionals are managed by AHFC with a rigorous set of protocols, operations manuals, and evaluation tools. The software used, AkWarm is a tool for builders, designers, energy raters, lenders and homeowners. The software can be used for energy design, establishing retrofit options, or to determine an energy rating and includes the ability to model renewables. This is the well-established industry standard for modeling home energy performance in Alaska.

**Housing Needs Assessment:** The Assessment provides a statewide, regional, and community look at major factors affecting housing benefiting policymakers, funding agencies, housing authorities, and others interested. Factors such as overcrowding, affordability, energy use, and how Alaskan communities compare with the rest of the U.S. are presented and analyzed.

**Residential Energy Appraisal Calculator:** Energy efficiency can change the economics of owning a home, and may influence selling price and loan characteristics. AHFC has recently completed development of an online energy efficiency calculator tool that incorporates a home's efficiency into the valuation process. The tool is designed to provide a resource for appraisers, lenders, real estate practitioners, and others in the industry.

**Efficient Design Prototype & Retrofit Best Practices:** Through AHFC contractor Cold Climate Housing Research Center, a research and testing facility for cold-climate construction, AHFC can direct extensive building science expertise to RACEE Community Energy Champions. CCHRC has developed and tested innovative housing designs, including wall systems, mechanical systems, energy systems, and water management systems. This includes design and construction of super-efficient prototypes for rural communities throughout the state. CCHRC also evaluates energy use of buildings and communities through data and economic analysis. They have developed many techniques and approaches for energy efficient retrofits statewide. This expertise could prove valuable for Community Efficiency Champions wanting to focus on residential building efficiency to meet their pledge of 15% energy reduction. CCHRC's role would be to help evaluate existing energy use and propose efficiency measures for buildings, including cost estimates, design, and scope.

**Residential Data Collection, Feasibility, Analysis, & Design:** Using the Alaska Housing Finance Corporation's building energy use analysis and modeling tools local and regional housing authorities could, under existing contracts with AHFC, conduct preliminary data collection needed to determine the potential cost and energy savings from implementing a multi-home weatherization project. Local and regional housing authorities provide weatherization services to the communities they serve and so are familiar with the cost and logistics involved in working with remote communities.

**Strategic Energy Management Practices:** The Alaska Housing Finance Corporation's 14 chapter Strategic Energy Management Practices Guide is a textbook for commercial building efficiency best practices.

## **Alaska Sea Grant Marine Advisory Program (ASGMAP)**

The Alaska Sea Grant Marine Advisory Program (ASGMAP) is a statewide marine extension program based at the University of Alaska Fairbanks. ASGMAP provides training and technical assistance to coastal communities, industries, municipal and tribal governments in the areas of healthy ecosystems, resilient communities and economies, sustainable fisheries and workforce development. Our seafood technology and seafood marketing faculty members work closely with seafood processors across the state providing technical assistance and training on product safety and development, process technology, business planning and marketing. ASGMAP's role in Phase 2 of RACEE could be to provide technical assistance with seafood plants around the state regarding energy efficiency in seafood processing plants related to refrigeration, freezing, motor use and building operations.

## **Alaska Village Council Presidents (AVCP)**

**Energy Data Collection & Analysis:** In their capacity as a regional liaison for the RACEE Phase Two technical assistance AVCP and their subcontractor, Nuvista Light & Electric Cooperative, may be asked to facilitate data collection, analysis, and some feasibility assessments on a case-by-case basis. Data collection and analysis may include (and is not limited to): comprehensive community building inventories, building energy use benchmarking, an assessment of potential project cash flow, and an assessment of the community's financial position (their ability to assume debt).

## **Copper Valley Development Association (CVDA)**

**Energy Data Collection & Analysis:** In their capacity as a regional liaison for the RACEE Phase Two technical assistance Copper Valley Development Association may be asked to facilitate data collection, analysis, and some feasibility assessments on a case-by-case basis. Data collection may include (and is not limited to): comprehensive community building inventories, building energy use benchmarking, an assessment of potential project cash flow, and an assessment of the community's financial position (their ability to assume debt).

## **DOE Office of Energy Efficiency and Renewable Energy**

**Calculate Cost Savings Potential of Outdoor Lighting Retrofits:** The Better Building Outdoor Lighting Accelerator gives local governments partners access to technical assistance for street/roadway, parking facility, and parks and recreation lighting. Technical providers at DOE's Pacific Northwest National Lab consult by phone to help communities determine cost effectiveness of switching to LED lighting. New LED technologies can reduce energy costs by approximately 50% over conventional lighting technologies and provide additional savings of 20 to 40% with advance lighting controls.

**Combined Heat and Power (CHP) Technical Assistance Partnerships:** DOE's CHP partnerships provide education and outreach, site-specific screenings and analysis, and project development analysis around CHP. DOE's Northwest TAP, based in Oregon, has experience in providing Alaskan manufacturers with CHP assessments and engineering assistance.

**Distribution System Efficiency:** The National Renewable Energy Lab (NREL) partners with Alaskan state agencies, non-profits, universities, and private companies on distribution system efficiencies and integrated deployment. NREL has surveyed the distribution system and developed a list of actions the village needed to take in order to stabilize the distribution system, ensure safety, and reduce line losses. NREL can also identify measures that communities can take on their distribution system to better accommodate the integration of variable renewable energy solutions.

**Geothermal Technical Assistance:** The Geothermal Technologies Office can provide guidance on the utilization of low-temperature and direct use applications. These applications support BTU offset associated with traditional heating applications as well as hybrid applications incorporating waste heat utilization in conjunction with low temperature power generation. In addition, direct use applications associated with greenhouses and other forms of food harvesting can significantly reduce energy consumption compared to traditional energy use.

NREL has pioneered the development of a techno-economic model that can help Native Villages evaluate the feasibility of integrating ground-source heat pumps (GSHP) into residences and community facilities. GSHP technology is appropriate for new buildings, building retrofits and campus/district- heating and cooling.

**Home Energy Score Assessment:** The Home Energy Score system is intended to provide homeowners and homebuyers with an estimate of how much energy a home consumes. The assessment is intended to be done by a trained assessor, with info gathered from a walk-through. Additional information is available at <http://energy.gov/eere/buildings/home-energy-score>.

**Software Tools:** EERE's Advanced Manufacturing Office's tools help manufacturers increase industrial energy efficiency at the plant-level and in specific systems. Training to use the systems may be available.

**Solar Energy Integration:** NREL has developed guidelines for new building design and building retrofits to make them "solar-ready". Technical assistance can be used to help Native Villages design a built environment that enables the installation of solar photovoltaic, solar hot water, and solar ventilation preheat systems. NREL can also model and design optimal solar energy solutions, including storage, for specific buildings or on a community scale.

**Strategic Energy Planning:** EERE's State and Local Solution Center is a portal to resources aimed at state and local organizations. Main Action Areas are: Develop a Clean Energy Strategy; Design and Implement Clean Energy Programs; Pay for Clean Energy; Access and Use Energy Data: <http://energy.gov/eere/slsc/state-and-local-solution-center>.

**Strategy Development (Pumps, Motors, and Drives):** The Industrial Assessment Center (IACs) are a network of 24 engineering universities across the country that can offer small- and

medium-sized manufacturers no cost energy, productivity, and water/wastewater reduction opportunity assessments. Boise State has experience in providing Alaskan manufacturers with assessments and energy savings assistance. Additional information is available at <http://iac.university>.

**Water and Waste Water Efficiency:** Provided through the Industrial Assessment Center, see Strategy development, above.

## **DOE Office of Indian Energy**

**Climate Change Resiliency:** NREL's energy resiliency program offers a broad range of one-on-one technical assistance services in both preparedness and planning and recovering and rebuilding, including whole-community energy planning, energy-efficient design and rebuilding strategies, and clear information for decision makers. Our comprehensive energy solutions address the full spectrum of disaster planning and recovery. The preparedness and planning technical assistance aids communities in improving resistance and resiliency through technical solutions, plan for secure, sustainable, and safe communities, and establish policies and codes that support resiliency.

Technical experts from DOE and its national laboratories, along with other partnering organizations, provide up to 40 hours per year of in-depth support to assist tribes and Alaska Native villages with project development. The goal of the technical assistance is to address a specific challenge or fulfill a need that is essential to a current project's successful implementation. The intended result is a tangible product or specific deliverable designed to help move a project forward. The technical assistance provided is not intended to compete with industry by performing activities typically performed by consultants/contractors, nor is it intended to provide skills/job training or field general inquiries.

Examples of this type of technical assistance include:

- Objective advice grounded in research and real-world experience on technologies
- Modeling and analysis (or assistance in using available modeling/analysis tools)
- Economic evaluations
- System design reviews
- Other specific studies or analysis
- Strategic communications planning (on-site workshop designed to assist in identifying target audiences, developing key messaging, and establishing a framework for a tribally owned and executed communications plan)

**Strategic Energy Planning:** Strategic energy planning technical assistance is provided through an on-site workshop designed to assist tribal leaders and staff in understanding their resources, identifying options, and developing a viable road map to successful completion of a project. The workshop is facilitated by a tribal energy expert and walks attendees through nine specific energy planning steps.

## **Kawerak, Inc.**

**Energy Data Collection & Analysis:** In their capacity as a regional liaison for the RACEE Phase Two technical assistance Kawerak, Inc. and their subcontractor Bering Strait Development Corporation (BSDC) may be asked to facilitate data collection, analysis, and some feasibility assessments on a case-by-case basis. Data collection may include (and is not limited to): comprehensive community building inventories, building energy use benchmarking, building/facility energy audits, an assessment of potential project cash flow, and an assessment of the community's financial position (their ability to assume debt).

## **North Slope Borough (NSB)**

**Energy Data Collection & Analysis:** In their capacity as a regional liaison for the RACEE Phase Two technical assistance the North Slope Borough may be asked to facilitate data collection, analysis, and some feasibility assessments on a case-by-case basis. Data collection may include (and is not limited to): comprehensive community building inventories, building energy use benchmarking, building/facility energy audits, an assessment of potential project cash flow, and an assessment of the community's financial position (their ability to assume debt).

## **Northwest Arctic Borough (NWAB)**

**Energy Data Collection & Analysis:** In their capacity as a regional liaison for the RACEE Phase Two technical assistance the Northwest Arctic Borough may be asked to facilitate data collection, analysis, and some feasibility assessments on a case-by-case basis. Data collection may include (and is not limited to): comprehensive community building inventories, building energy use benchmarking, building/facility energy audits, an assessment of potential project cash flow, and an assessment of the community's financial position (their ability to assume debt).

## **Prince William Sound Economic Development District (PWSEDD)**

**Energy Data Collection & Analysis:** In their capacity as a regional liaison for the RACEE Phase Two technical assistance PWSEDD may be asked to facilitate data collection, analysis, and some feasibility assessments on a case-by-case basis. Data collection may include (and is not limited to): comprehensive community building inventories, building energy use benchmarking, an assessment of potential project cash flow, and an assessment of the community's financial position (their ability to assume debt).

## **Southeast Alaska Conference (“SE Conference”)**

**Energy Data Collection & Analysis:** In their capacity as a regional liaison for the RACEE Phase Two technical assistance SE Conference and their subcontractor, Renewable Alaska Energy Project (REAP) may be asked to facilitate data collection, analysis, and some feasibility assessments on a case-by-case basis. Data collection may include (and is not limited to): comprehensive community building inventories, building energy use benchmarking, an assessment of potential project cash flow, and an assessment of the community’s financial position (their ability to assume debt).

## **Southwest Alaska Municipal Conference (SWAMC)**

**Energy Data Collection & Analysis:** In their capacity as a regional liaison for the RACEE Phase Two technical assistance SWAMC may be asked to facilitate data collection, analysis, and some feasibility assessments on a case-by-case basis. Data collection may include (and is not limited to): comprehensive community building inventories, building energy use benchmarking, an assessment of potential project cash flow, and an assessment of the community’s financial position (their ability to assume debt).

## **Tanana Chiefs Conference (TCC)**

**Energy Data Collection & Analysis:** In their capacity as a regional liaison for the RACEE Phase Two technical assistance TCC may be asked to facilitate data collection, analysis, and some feasibility assessments on a case-by-case basis. Data collection may include (and is not limited to): comprehensive community building inventories, building energy use benchmarking, building/facility energy audits, an assessment of potential project cash flow, and an assessment of the community’s financial position (their ability to assume debt).

## **University of Alaska Anchorage (UAA)**

**Business and Finance Planning:** The University of Alaska Anchorage Business Enterprise Institute (BEI) links economic development programs across the University of Alaska system and supports businesses and entrepreneurial capacities across Alaska. BEI provides a platform for high-level consultancy between industries and UAA. Providing economic development-related research and technical assistance, high-level professional education, small business development services and youth entrepreneurship programming, BEI serves as a bridge to expertise and talents throughout UAA. In 2014 the University of Alaska Center for Economic Development, a division of BEI, conducted a Manufacturing Extension Partnership study: <http://www.nist.gov/mep/about/upload/Alaska-Planning-Study-FINAL.pdf>. The Center for Economic Development can assist with the creation of business plans for powerhouses.

## **Village Safe Water (VSW)**

Many rural Alaska Communities lack a safe source of drinking water or a safe means of sewage disposal – the Village Safe Water Program is working to change this. As one of the three Facility Programs established within Alaska’s Department of Environmental Conservation, Division of Water, the role of the VSW program is to work with rural communities to develop sustainable sanitation facilities.

### **Building/Facility Audits, Feasibility & Design, and Operations & Maintenance Plan**

**Development:** Through a contract to the Alaska Native Tribal Health Consortium’s Rural Energy division, which works to improve the sustainability and reduce operating costs of rural sanitation systems and health care facilities across Alaska, RACEE TA could include audits, feasibility, design and O&M development for sanitation and/or healthcare facilities.