

Alaska Energy Authority

Renewable Energy Fund Application – Solar Program Best Practices Checklist

The following checklist contains detail items that are critical to the success of a Renewable Energy Fund application. The intent of the checklist is to aid applicants in the submission of a comprehensive project proposal.

Economic Analysis

- Clearly identify assumptions and their sources
- Use proper conversion values for energy units
- Verify cost of diesel or other fuel offset by proposed project
- Analyze the efficiency of the existing energy system
- Identify estimated maintenance and operating costs and explain the rationale used
- Include impacts, if any, on diesel efficiency and heat recovery
- Do not include utility non-fuel costs (i.e. full electric rate) in savings
- For non-utility projects, analyze utility bills to determine impact of solar output, particularly with regards to utility rate structure and Power Cost Equalization impacts
- Check to see if the building qualifies as a community facility under Power Cost Equalization. If so, the benefit to the owner should be adjusted accordingly.

Business Plan

- Identify responsibilities of project stakeholders and participants.
- Estimate O&M costs (AEA can be a resource for this)
- Ensure that PCE reporting, IRS, and Bulk Fuel Loans are current. See reference in the Request For Applications.
- Verify that the project is consistent with the Regional Energy Plan

Solar Resource Assessment

- The National Renewable Energy Laboratory's (NREL) PVWatts website (<http://pvwatts.nrel.gov/>) is a web-based solar PV tool that estimates the power production from a grid-connected solar PV system based on a few simple inputs. This method is sufficient for most Alaska solar assessments, but should be adjusted if there is significant shading or other site-specific impacts.
- Shading analysis is critical. Most Alaska solar projects experience some degree of shading and related performance impacts. If the applicant does not have the in-house expertise to analyze shading impacts, there are a number of Alaska solar contractors who can do it. Check AEA's list of Alaska solar contractors.

Design Considerations

- Can the diesel system parallel safely with the solar PV system during periods of maximum solar output and minimum electric loads?
- Will the solar PV power output adversely impact three phase balance? i.e. is it a single phase system that may significantly unbalance the phase amperages?
- Can the proposed power system handle the ramp rate resulting from cloud impacts on solar output?
- Has the applicant included the effects of population changes or school operation changes on future electric loads?

Existing Energy System

- Current configuration and condition (gensets, switchgear, controls, heat recovery, transmission and distribution)
- Load profile by month (peak, minimum, average)
- Load growth projections
- Upgrades needed before RE project

- Is the existing diesel generation system in good condition?
- Is the distribution system in good condition?
- Are there opportunities for savings that are more economic than solar (heat recovery, diesel efficiency, etc.) that have not been implemented yet?

Environmental/Permitting

- Did you check the DEC Contaminated sites database (http://dec.alaska.gov/spar/csp/db_search.htm) to see if there is any contamination documented at the project site?
- Does the applicant understand code and permitting requirements? Some or all of these may be relevant, and other codes may apply:
 - Fire Marshal Plan Review
 - National Electric Code
 - National Electrical Safety Code
 - Solar Energy Code 8 AAC 63.010
 - Local construction permit
 - Electric utility interconnection permit
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Site control

- Site control must be finalized before construction funds are committed. Site control for pipelines and transmission or distribution power lines may be established using easements or utility right-of-ways so long as the period of the agreement meets or exceeds the intended life of the project
- Proof of valid title to the land and/or written documentation of any private agreements is required.
- The landowner must warrant that there are no liens or encumbrances on the property.
- Final proof of ownership shall be the certificate to plat.
- The grantee shall be responsible for resolving any land ownership disputes between state and/or federal entities, local landowners, native corporations, municipalities, boroughs and community organizations, or other entities.
- If the project site is adjacent to or near an airport or runway, the grantee must research FAA permit requirements, existing or pending leases and easements, and DOT expansion or relocation plans
- Land transfers required for project development shall be recorded with the appropriate District Recording office and a copy of the recordation provided to the AEA grant manager

List of reference websites

- NREL Solar Info: http://www.nrel.gov/learning/re_solar.html/
- PVWatts: <http://pvwatts.nrel.gov/>
- Solar Radiation Data Manual for Flat-plate and Concentrating Collectors: <http://rredc.nrel.gov/solar/pubs/redbook/>
- USDOE Solar Webpage: <http://energy.gov/science-innovation/energy-sources/renewable-energy/solar>

Common Pitfalls

- The grant applicant has not verified that the electric utility will allow interconnection of a renewable energy resource. This should be verified by Memorandum of Agreement, copy of utility tariff and policies, or other written proof. These documents should be included with the grant application.
- The grant applicant assumes that the solar PV system can operate in a net metering mode, but has not verified that the electric utility will allow that type of metering
- The project site is in a floodplain
- The project is single phase and will result in imbalance of the three phase distribution system during periods of high solar insolation