# DE-FOA-0001838: Notice of Opportunity for Technical Assistance for Techno-Economic Studies of Pumped-Storage Hydropower

**APPENDIX A. DATA REQUEST CHECKLIST**

Instructions: Below is a list of data types that will be requested from NOTA recipients after selections are made. Check the box to indicate whether the data requested is available or can be acquired, and attach the completed checklist to the full application, per Section III.B. Applicants are not expected to provide the respective data as part of the application. A more detailed data request will be sent to recipients after selections are made.

## 1. General Data

- ❒ Plant name
- ❒ Plant status
- ❒ Location
- ❒ Owner/developer
- ❒ Planned in-service date
- ❒ Timeline of project activities (e.g., licensing/permitting, preliminary design, construction, operation)
- ❒ Project layout

## 2. Techno-economic Data

- ❒ Plant generating and pumping capacity (MW)
- ❒ Plant overall round trip efficiency (%)
- ❒ Number of units
- ❒ Rated generating capacity of each unit (MW)
- ❒ Rated pumping capacity of each unit (MW)
- ❒ Minimum and maximum generating capacity by unit (MW)
- ❒ Generator rough zone levels by unit (MW)
- ❒ Minimum and maximum pumping capacity by unit (MW)
- ❒ Ramp rates in generating and pumping modes (MW/min)
- ❒ Mode change times (seconds)
- ❒ Energy storage of upper reservoir (MWh)

- ❒ Minimum and maximum water storage volume of upper reservoir (AF)
- ❒ Minimum and maximum water volume storage of the lower reservoir (AF)
- ❒ Nominal (design) head (ft)
- ❒ Nominal (design) flow (cfs)
- ❒ Gross and net maximum head (ft)
- ❒ Gross and net minimum head (ft)
- ❒ Surge tank details, if available
- ❒ Volume (AF)/level (ft) function for upper reservoir
- ❒ Upper reservoir surface area (acres) at maximum and minimum head (ft)
- ❒ Penstock/generator configuration(s)
- ❒ Turbine type
- ❒ Turbine generation efficiency (%)
- ❒ Turbine pumping efficiency (%)
- ❒ Motor/generator data:
    - ❍ Type
    - ❍ Nominal (rated) power in generating and pumping mode (MW)
    - ❍ Average expected efficiency in generating and pumping mode (%)
    - ❍ Expected/planned efficiency curves/hill diagrams in generating and pumping mode (if available)
- ❒ Tailrace elevation (ft) as a function of water releases (cfs)
- ❒ Anticipated interconnection point(s)
- ❒ Excitation systems and power electronics data
- ❒ Plant operating costs:
    - ❍ Fixed operation and maintenance (O&M) costs ($/kW-yr)
    - ❍ Variable O&M costs ($/MWh)
- ❒ Plant maintenance requirements:
    - ❍ Maintenance period duration (days)
    - ❍ Maintenance frequency/schedule
- ❒ Outages:
    - ❍ Projected average forced outage rate (fraction)
    - ❍ Frequency and length by outage cause

## 3. Site Characteristics

- ❒ Open-loop or closed-loop project?
- ❒ Is this a greenfield project or does it make use of an existing site?
- ❒ Dam type and characteristics
- ❒ Plant footprint (area)
- ❒ Size of upper reservoir [dead pool and active storage (AF) and surface area (acres)]
- ❒ Size of lower reservoir [dead pool and active storage (AF) and surface area (acres)]
- ❒ Minimum and maximum elevations of water level in upper reservoir (ft)
- ❒ Minimum and maximum elevations of water level in lower reservoir (ft)
- ❒ Evaporation rate (average AF/month)
- ❒ Water conveyance location and routing (including surge tank, if applicable)

## 4. Financial Data

- ❒ Capital investment costs ($/kW as of January 1, 2018)
- ❒ Itemized capital investment costs ($) for major project components, such as reservoirs, conveyance systems, electro-mechanical equipment, interconnection costs (including transmission lines and substations), licensing and permitting, project management costs, and contingencies.
- ❒ Plant economic lifetime (years)
- ❒ Plant depreciable life or book life (years)
- ❒ Tax and insurance costs
- ❒ Escalation rates for capital costs
- ❒ Escalation rates for O&M costs
- ❒ Project financing strategy:
    - ❍ Anticipated business model [e.g., contracted power purchase agreement (PPA), merchant plant, etc.]
    - ❍ Allowance for funds used during construction (AFUDC) or interest during construction (IDC) (%)
    - ❍ Debt/equity ratio (%)
    - ❍ WACC – weighted average cost of capital (%)
- ❒ Market participation and expected future market involvement