|  |  |
| --- | --- |
| **Project name:** | IEA Annex IX: Valuing Hydropower Services - Phase II |
| **Project leader and partners:** | US: Audun Botterud (ANL), Abhishek Somani (PNNL), Chris O’Reilley (PNNL)  Norway: Atle Harby (SINTEF), Linn Emelie Schäffer (Norwegian University of Science and Technology) |
| **Finalization year:** | TBD |
| **Type of project/ main topic:** | Hydropower, grid services, flexibility, valuation, international collaboration |
| **Main relevance for US-Norway MOU**: | The project reviews current and potential future mechanisms to compensate hydropower and other resources for providing services to the power grid. The international collaboration through the International Energy Agency (IEA) is relevant to ongoing research projects in the United States and Norway, as well as potential future collaborative projects. |
| **Short project description:**  IEA Hydro initiated Annex IX Phase I to investigate the value of services provided by storage hydro projects through the establishment of the economic values of energy management, water management and other socio-economic services. All hydropower projects which have any form of reservoir (even diurnal storage) are multipurpose and the services analysed are potentially applicable to all projects. Historically, the broad range of energy and non-energy services provided by hydropower plants have not been explicitly valued, being part of a utility’s mission.  Since the start of Phase I, two key issues affecting the hydropower sector have arisen; the penetration of variable renewable energy (VRE) sources has increased substantially and the potential impacts of climate change are being recognized. These dynamics pose both challenges and opportunities for hydropower and require further exploration and analysis beyond the scope of the original Annex work. This forms the basis of the current Phase II within Annex IX.  Phase II considers the role of hydropower in producing significant amounts of firm renewable energy and storage to support VRE’s, and providing flexible energy services to support electricity systems – collectively termed ‘hydro balancing’. Specifically, Phase II develops an understanding of two key strategic themes: 1) how hydropower will be valued in future electricity market scenarios, and 2) how hydropower will be valued under alternate climate change scenarios.  Key project outcomes includes white papers, reports, workshops that all facilitate sharing of information between IEA member countries on flexibility in current and future electricity markets and the corresponding role of hydropower. | |
| **Other comments:**  None. | |
| **Available resources:**  IEA Hydro Annex IX website: <https://www.ieahydro.org/annex-ix-hydropower-services> | |