

Hydropower Vision: Task Force Charter

Hydropower Vision Defined

The U.S. Department of Energy (DOE) Wind and Water Power Technologies Office is looking toward the future of the hydropower community in developing a long-range national Hydropower Vision in close coordination with industry, agencies, and stakeholders. This landmark vision will establish the analytical basis for responsible growth in domestic hydropower over the next half century as a key part of the national renewable energy mix. Included in this effort will be:

- A close examination of the current state of the hydropower industry
- An analytically-supported target for hydropower growth within a specific timeframe
- A discussion of the costs and benefits to the nation arising from additional hydropower
- A roadmap that clearly captures the activities and steps necessary to maximize the probability of achieving the Vision

Objectives of the Hydropower Vision

In addition to documenting and analyzing the current status of hydropower technologies and the hydropower industry, the objectives of the initiative are to:

- Lead the development of a cohesive long-term vision
- Analyze a range of ambitious but attainable target industry growth scenarios
- Provide best available information, and dispel myths if necessary, related to stakeholder interests
- Provide objective and relevant information for use by policy and decision makers

Core Principles of the Hydropower Vision

- Consistency
- Referenceable data
- Transparent and replicable
- Objective, unbiased and high integrity
- Discipline in communications
- Leveraging experts across the hydropower community
- Broad stakeholder engagement: proponents and opponents
- Technical & business peer review
- Compliance with the Information Quality Act¹

Scope of the Hydropower Vision

- State of the Industry: Where we are
 - Document trends and current state of existing infrastructure, differences in federal and nonfederal sectors, contributions to US energy portfolio, effect on the grid, and what a “business as usual” baseline would look like.
 - Document current technology, market, environmental and regulatory challenges to further deployment.

¹ Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies (OMB guidelines), 67 FR 8452 (February 22, 2002)

- The Vision: Where we can go
 - Model economic and deployment growth scenarios. The modeling process will include refinement of key inputs such as resources and costs.
- Benefits: What will be attained when we arrive
 - Quantify and monetize environmental, economic and social benefits of achieving the Vision (e.g. reduced GHG emissions) to better compare to alternative scenarios for meeting national energy needs.
- Roadmap: How we can get there
 - Assess technology development and commercialization pathways to overcoming relevant challenges posed by the Vision growth scenarios, while ensuring hydro remains a sustainable source of renewable energy.
 - Investigate hydro grid integration strategies and transmission planning in response to the Vision growth scenarios.
 - Evaluate pathways to overcome market and regulatory challenges associated with the Vision growth scenarios.

Hydropower Community Involvement in the Hydropower Vision

A vision for the hydropower community can only be relevant and impactful if key organizations play significant roles in its development. Therefore, DOE is proud to have the National Hydropower Association (NHA) as a partner in this initiative. With help from NHA, DOE has convened a Senior Peer Review Group (SPRG) comprised of representative executive leaders from key hydropower sectors to provide strategic guidance (Table 1). This group has been established and conducted its first meeting in April 2014, with future meetings planned on a quarterly basis. Additionally, a series of Task Forces (Table 2) will be formed to help ensure that the Hydropower Vision has both breadth and depth in its approach to the future of this vital renewable energy industry.

Table 1: Hydropower Vision - Senior Peer Review Group Sectors

Department of Energy	Trade Organizations
Independent Power Producers	OEMs
Environmental NGOs	State Organizations
New Hydro Developers	Consultants
Utilities	Regulatory/Resource Management Agencies

Organizational aspects of the Vision process are coordinated by a Hydropower Vision Core Team from the DOE Wind and Water Power Technologies Office and NHA. Engagement of the SPRG is coordinated by the Core Team, and the Core Team will interact with the Task Forces as well.

Task Force Definition

A Task Force is a subject-based working group coordinated by a staff member of one of the DOE national laboratories and comprised of volunteer representatives from the hydropower industry, stakeholders, government agencies, and national labs.

Role of Task Forces

Task Forces will delve deeply into their respective subject areas to help characterize the current state of the industry; identify opportunities, challenges and limitations to growth; contribute data to and comment on modeling assumptions; and help delineate a roadmap to responsible sustainable development.

Within the general framework of the Vision report outline, it is expected that Task Force members will freely provide their own perspective on how to best convey and address key issues and concepts. This exchange of information and viewpoints is highly important to ensuring the long term relevance of the Vision documentation.

The Task Forces will compile their topic-specific discussions and work products into content that will contribute to the Vision, and will be aggregated into sections of the Hydropower Vision report. The Core Team will develop the high-level Vision document outline. Task Force leaders will review the outline and solidify subtopics to be covered, and to what degree, in each document section. The Core Team will harmonize these suggestions into the structure and scope of the report and Core Team will ensure that an efficient methodology of lead authors and contributors is in place to build the document effectively. How to complete the writing assignments will be up to the Task Force leaders, but will most likely involve group discussion, research (all statements of facts must be referenceable), and Task Force-to-Task Force interaction. See Figure 1 for a summary schedule of the report process.

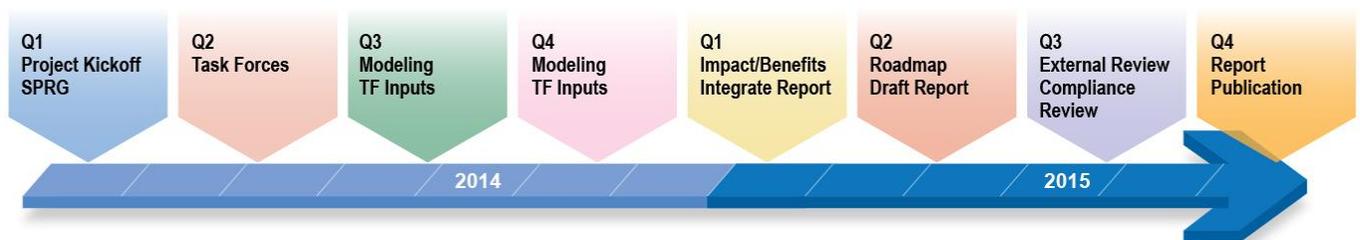


Figure 1: Summary schedule (in calendar years) of the Hydropower Vision project.

Task Force Interaction

Task Forces are designed to be as distinct in focus area as possible (see Table 2), but frequent and robust interactions between Task Forces on subject matter are critical in order to capture the depth of the industry (see Table 3). The mechanisms below are designed to facilitate Task Force-to-Task Force interactions, with Task Force leaders initiating the cross-pollination of people and ideas:

- Task Force leaders will meet as a group at least once a month to share information, with more targeted meetings encouraged between leaders heading those Task Forces with significant overlap. The name and contact information of each Task Force leader is provided in Table 2.
- As Task Forces get underway, leaders will work with each group to broaden and refine the definitions of what each Task Force will cover (Table 2), interacting closely with other leaders to avoid duplication and to identify key Task Force interface points.
- SPRG members and the hydropower community can propose members across multiple Task Forces to ensure that expertise is distributed appropriately (e.g., environmental experts proposed in Project Development Task Force.)
- If it is determined to be necessary by the Task Force leaders, inter-Task Force subgroups can be formed on topics of significant overlap. For example, the concept of sustainability must be a part of all Task Forces, and if the Task Force Leaders and/or the Core Team find this to be lacking, a Sustainability subgroup could be formed made up of members from each Task Force to collaborate on this topic

- Core Team members have been strategically assigned to Task Forces to further facilitate communication and coordination.

Expected Time Commitment for Task Force Members

- **Factors determining time commitment:** As Task Forces get underway; each Task Force leader will determine the discussions, research, written material, etc. needed to effectively convey that group's input into formulation of the Vision and preparation of the Vision document relative to the preliminary Hydropower Vision report outline. These requirements, as well as the size and composition of the Task Force, will in turn determine the time commitment from each member.
- **Estimates of time commitment:** As a broad estimate, involvement could range from 8 hours to 20 hours (nominally 15%) or more per month depending on the specific needs at a given time and commitment from the member's own organization, as well as on a given individual's own availability and initiative.
- **Time Frame:** Task Forces will be formed June, 2014 and are expected to remain active through July, 2015.
- **Voluntary Basis:** All Task Force members other than DOE national laboratory staff will be expected to participate on a voluntary basis or through their organizations, as DOE cannot provide compensation.

Process to Recommend Task Force Members

Task Force members can be recommended by sending the following information to: hydropower.vision@ee.doe.gov

- Name, Title, Organization
- Responsibilities
- Brief Resume/CV (if available)
- Task Force Recommendation

Ideally, Task Force members will have a blend of technical expertise and broader awareness of hydropower-specific factors and issues.

Table 2: Hydropower Vision Task Forces.For more information or to get involved with the Task Forces please contact: hydropower.vision@ee.doe.gov

TASK FORCE	Lab Lead	Core Team Assignee	Description
Technology	Bo Hadjerioua (ORNL)	Peter Drown	Identify and investigate any opportunities and impacts associated with the full life cycle development, manufacturing, and application of conventional and innovative hydropower technologies. This includes all aspects of a plant (e.g. turbines, civil works, software).
Project Development	Bo Saulsbury (ORNL)	Dave Culligan	Characterize and examine any challenges, opportunities and impacts associated within the complete project development life cycle (siting through commissioning) – for ALL resource/size classes.
Sustainability, Environmental, and Regulatory Considerations	Simon Geerlofs (PNNL)	Dave Culligan	Address any challenges, opportunities and impacts related to either the environment (e.g. fish passage, flows) and/or the regulatory process (e.g. FERC, Corps, Reclamation LOPP, states) that effect hydropower projects at all life cycle stages; as well as to the long term sustainability of the industry and its resources.
Grid Integration and Transmission	Michael Milligan (NREL)	Gary Norton	Investigate any challenges, opportunities and impacts related to hydropower's interaction with the grid (e.g. interconnection, build-out, variable renewable integration).
O&M and Performance Optimization	Brennan Smith (ORNL)	Gary Norton	Examine any challenges, opportunities and impacts related to a project/hydropower system once it is built and must be operated, maintained, and optimized.
Markets	Patrick O'Connor (ORNL)	Peter Drown	Characterize market drivers and dynamics (energy, capacity, ancillary services) taking account of regional differences. Assess challenges, opportunities and impacts related to current (e.g. value of ancillary services) or future (e.g. GHG avoided) hydropower markets that can be monetized. Understand the financial model of modern hydropower and overall affordability.
Pumped Storage	Vladimir Koritarov (ANL)	Peter Drown	Explore any challenges, opportunities and impacts unique to pumped storage hydropower. This includes any technology, project development, sustainability, regulatory, grid integration, transmission, O&M, performance optimization, or markets issues. Interact very closely with other Task Forces.
Economic Development	David Keyser (NREL)	TJ Heibel	Investigate and quantify challenges, opportunities and impacts associated with hydropower economic development including the declining workforce, the potential for jobs and the supply chain.
Modeling and Analysis (cross-cutting)	Maureen Hand (NREL)	TJ Heibel	Apply computational tools to model and analyze potential scenarios illustrating opportunities and impacts for sustainable hydropower growth. Includes benefits related to hydropower (e.g. GHG reductions, water savings).
Roadmap (cross-cutting, formed later to coalesce info from Task Forces)	TBD	Dave Culligan	Provide a well-thought-out action plan for sustainable expansion of hydropower in the national interest. Define and sequence specific top-level activities for all major stakeholder sectors. Provide a framework from which more specific activities can be defined at greater levels of detail. Provide a pathway to work constructively with interest groups who may be critical of hydropower. Concrete actions and timeline provide confidence that the Vision is achievable.
Communications (cross-cutting)	Alex Lemke (NREL)	TJ Heibel	Communicate the results of the Vision. Responsible for document construction, formatting, branding, marketing, and dissemination.

Table 3: Relational Matrix of Hydropower Vision Task Forces (Red=Critical; Green=Chapter Coordination; Yellow=Linked).

Relational Matrix		ORNL	NREL	PNNL	ANL	Technology	Project Development	Sustainability, Environmental, and Regulatory Considerations	Grid Integration and Transmission	O&M and Performance Optimization	Markets	Pumped Storage	Economic Development	Modeling and Analysis
		Lab Leadership				Task Force Relationships								
Technology	1	x					Green	Green	Yellow	Red	Green	Yellow	Yellow	Green
Project Development	2	x						Red	Yellow	Green	Green	Yellow	Green	Green
Sustainability, Environmental, and Regulatory Considerations	3			x					Yellow	Yellow	Green	Yellow	Yellow	Green
Grid Integration and Transmission	4		x							Green	Green	Red	Green	Green
O&M and Performance Optimization	5	x									Green	Yellow	Yellow	Green
Markets	6	x										Green	Green	Green
Pumped Storage	7				x								Yellow	Green
Economic Development	8		x											Green
Modeling and Analysis	9		x											
Roadmap	10	(cross-cutting, formed later to coalesce info from Task Forces)												
Communications	11	(cross-cutting)												