New Stream-Reach Hydropower Development

Identifying and Evaluating New Hydropower Resources

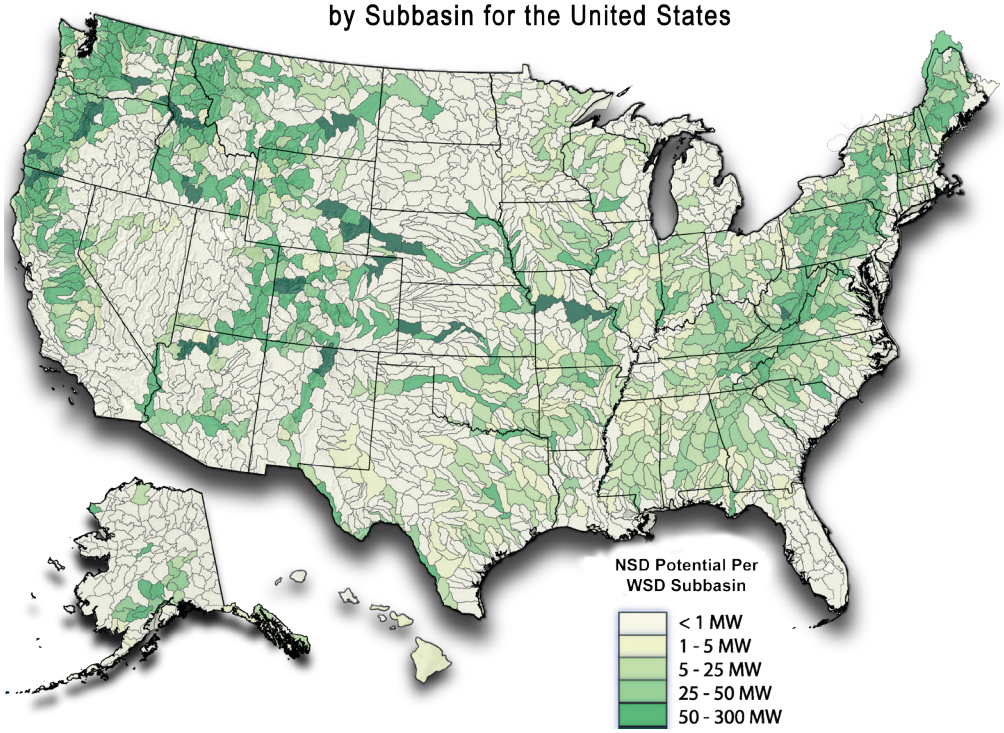
More than 65 GW of sustainable hydropower potential still exists in U.S. stream-reaches, according to a hydro-power resource assessment funded by the Department of Energy and executed by Oak Ridge National Laboratory.

The New Stream-reach Development (NSD) project implemented an ad-vanced geo-spatial approach to analyze the potential for new hydropower development in U.S. stream-reaches that do not currently have hydroelectric facilities or other forms of infrastructure.

The assessment leveraged recent advancements in geographic datasets on topography, hydrology, and environ-mental characteristics to develop the highest resolution and most rigorous national evaluation of U.S. hydropower potential to date.

The results of the project—with analysis for new stream-reach potential within each hydrologic region and state—are published in *An Assessment of Energy Potential from New Stream-reach Development in the United States* and the data are publicly available at nhaap.ornl.gov/nsd. The highest potential among states was found largely in the western U.S.—Washington, Idaho, Alaska, Oregon, Montana, Colorado, and California—with Kansas, Wyoming, Missouri, and Pennsylvania, leading the rest of the country.

New Stream-reach Development (NSD) Potential by Subbasin for the United States



Working to Ensure Environmental and Social Transparency

The evaluation of opportunities for new hydropower development must include considerations of ecological and social sustainability. Although the NSD assessment did not make recommendations about feasibility for specific sites, it did rigorously identify and map potential issues of environmental and social concern that overlap areas with high resource potential.

This will give developers and other stakeholders access to large amounts of data that can lead to more targeted assessments and better identification of lower-conflict development opportunities, reducing the time and cost of licensing and ultimately resulting in a more sustainable hydropower facilities being built.

Employing an Innovative Methodology

The assessment was conducted consid-ering the technical resource that could be available for development, and using present-day assumptions about hydropower technology. The methodology alone does not produce estimates of generation, cost, or potential impacts of sufficient accuracy to determine project-specific feasibility or to justify invest-ments, and not all areas identified in this assessment will be practical or feasible to develop for various reasons.

The estimated technical resource capac-ity for new stream-reach development is 84.7 GW, with generation estimated at 460 TWh/year. When areas protected by federal legislation limiting the development of new hydropower

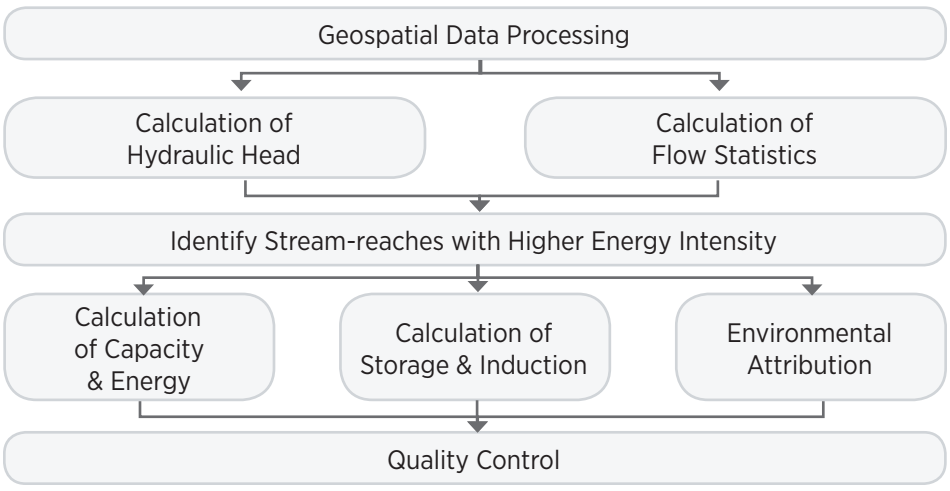
Summary of NSD Findings by State, Excluding Stream-reaches that Are in Close Proximity to National Parks, Wild and Scenic Rivers, and Wilderness Areas

State	Potential capacity (MW)	Potential generation (MWh/year)	State	Potential capacity (MW)	Potential generation (MWh/year)
AK*	4,530	(not estimated)	MT	3,914	23,413,000
AL	646	3,435,000	NC	796	4,697,000
AR	1,108	5,964,000	ND	252	1,523,000
AZ	515	3,090,000	NE	1,851	11,332,000
CA	3,360	18,570,000	NH	394	2,339,000
CO	3,802	22,699,000	NJ	61	359,000
CT	141	807,000	NM	917	5,113,000
DE	5	30,000	NV	226	1,208,000
FL	171	962,000	NY	1,809	10,192,000
GA	580	3,341,000	OH	491	2,561,000
HI*	145	699,000	OK	1,147	5,837,000
IA	738	3,876,000	OR	4,492	25,013,000
ID	4,937	28,645,000	PA	2,418	13,140,000
IL	573	3,092,000	RI	13	73,000
IN	582	3,132,000	SC	284	1,689,000
KS	2,479	14,931,000	SD	112	633,000
KY	662	3,242,000	TN	869	4,908,000
LA	789	4,461,000	TX	1,367	6,862,000
MA	176	1,012,000	UT	678	4,005,000
MD	189	1,036,000	VA	1,080	5,963,000
ME	1,059	6,146,000	VT	400	2,338,000
MI	380	2,407,000	WA	6,055	35,442,000
MN	516	2,870,000	WI	522	3,287,000
MO	2,450	14,145,000	WV	1,228	6,444,000
MS	1,112	6,361,000	WY	2,476	13,949,000

**Note: The AK and HI potential are assessed using a different approach from that used for the other 48 states.*

(national parks, wild and scenic rivers, and wilderness areas) were excluded from the analysis, the estimated NSD capacity is to 65.5 GW, with generation estimated to be 347.3 TWh/year (roughly 128% of the average 2002–2011 net annual generation from existing hydropower plants, according to the Energy Information Administration in 2013). In total, 34 states had potential resources greater than 500 MW identified, and 20 states had greater than 1,000 MW of potential resources. ■

High-Level NSD Study Methodology



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