Answering the Call for Storage

Sarah E. Kulpa
HDR|DTA

The Problem

January 21, 2010:

FERC Notice of Inquiry on challenges posed by integration of increasing numbers of **V**ariable **E**nergy **R**esources (VERs)

April 12, 2010:

NHA Comments filed in response to NOI

→Policy changes are needed to facilitate the construction of new pumped storage facilities

The Obstacles

(1) Investment climate uncertainty

(2) Long development timelines

(3) Lack of economic incentives for development of energy storage infrastructure

The Evidence

SMUD's Iowa Hill Development (Upper American River Project)

Estimated construction cost: $552 million to $855 million

Summary of annual net benefits (from Section 4.5, FERC FEIS, 3/2008):

	UARP w/o Iowa Hill	UARP w/ Iowa Hill
Dependable capacity (MW)	400	800
Value of dependable capacity	$38,384,000	$76,768,000
Generation (MWh)	1,699,000	2,673,000 (931,000=Super Peak)
Annual power value	$155,094,200	$278,327,000
Pump-back energy requirements (MWh)	--	1,230,000
Annual cost pump-back energy	$0	$68,634,000
Annualized cost of plant and current and new enviro. measures	$46,998,200	$167,536,000
Annual net benefit	$108,096,000	$110,791,000
Annual net benefit ($/MWh)	$63.62	$41.45

The Interpretation

Although the economic benefit of the Iowa Hill development may appear marginal, we agree with SMUD that the operational flexibility of pumped-storage projects provides an advantage compared to other types of generators that compete in the ancillary services market. . . These benefits take on increased importance given SMUD's role as a control area.

- (FERC FEIS, Mar. 2008)

The Solutions

(1) Expansion (and extension) of the current ITC/PTC

(2) Creation of an Energy Storage Credit

(3) Policies that recognize pumped storage as part of transmission system for qualifying for transmission rate incentives

(4) Policies that promote intergovernmental cooperation and efficiencies in permitting and licensing processes

(5) Consideration of store and release capability of existing hydro projects as related to VER integration

The Consensus

Pumped storage =

a transmission system tool that provides crucial storage, generation, and ancillary services

The Outlook

- 32 active preliminary permits, 3 original projects pending (Iowa Hill, LEAPS, and Eagle Mt.)
- Increasing policy recognition of the need to tie energy storage with VERs
  - FERC NOI
  - Proposed legislation in California Assembly (AB 2514) - storage procurement targets
- Future RFPs for storage or other ancillary services

The Challenges

- Physical differences between conventional hydro and pumped storage and consequences for the licensing processes
- Engineering pumped storage projects for a lighter environmental footprint
- New pumped storage as a planned transmission system improvement and licensing and permitting within the context of regional transmission planning

Additional Information

Sarah Kulpa
HDR|DTA
1304 Buckley Road, Suite 202
Syracuse, NY 13212

sarah.kulpa@hdrinc.com

315.415.8703 (Cell)
315.414.2204 (Office)