



Federal Energy Regulatory Commission

**Closed-Loop Pumped Storage Projects At
Abandoned Mine Sites Workshop**

**Thursday, April 4, 2019
1:00 p.m. – 4:45 p.m. (EDT)**



Section 3004 of America's Water Infrastructure Act

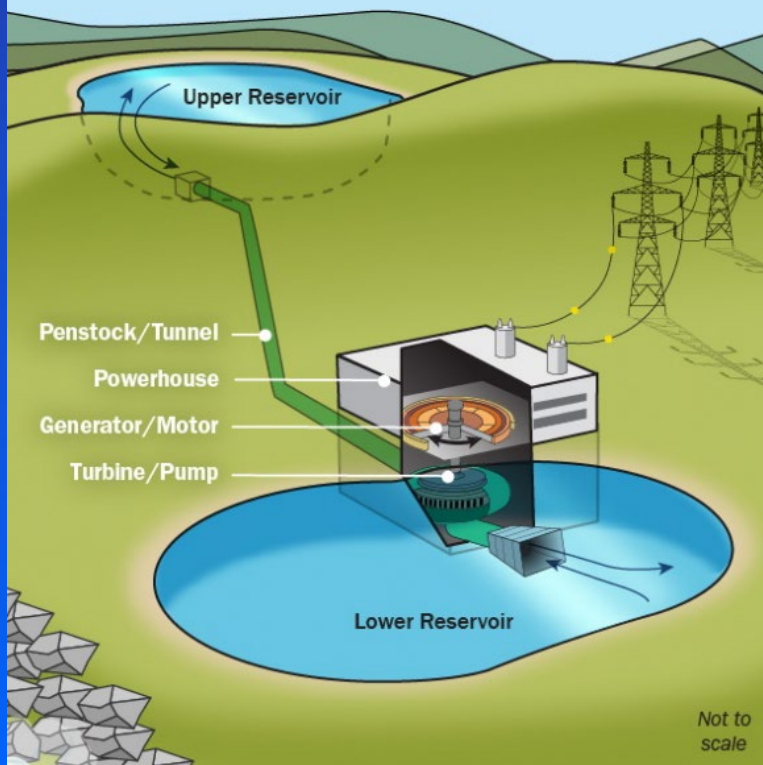
- October 23, 2018 – Enacted
- April 4, 2019 – Workshop on closed-loop pumped storage projects at abandoned mine sites
- September 2019 – Issue guidance for licenses or permits for closed-loop pumped storage projects at abandoned mine sites



Closed-Loop vs. Open-Loop Pumped Storage Project

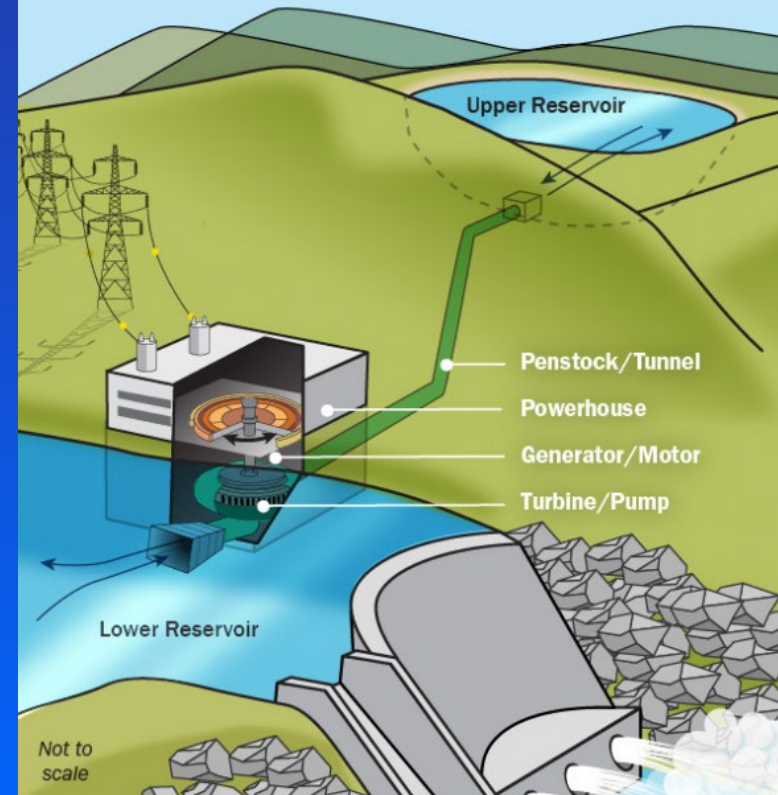
CLOSED-LOOP PUMPED-STORAGE HYDROPOWER

Projects that are not continuously connected to a naturally flowing water feature



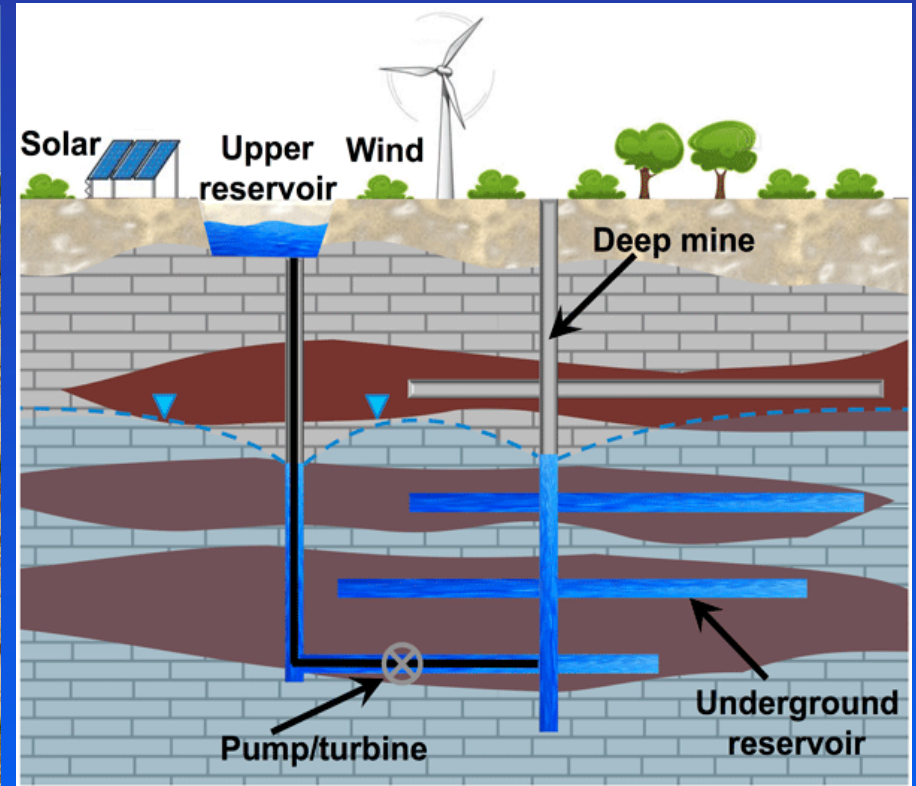
OPEN-LOOP PUMPED-STORAGE HYDROPOWER

Projects that are continuously connected to a naturally flowing water feature



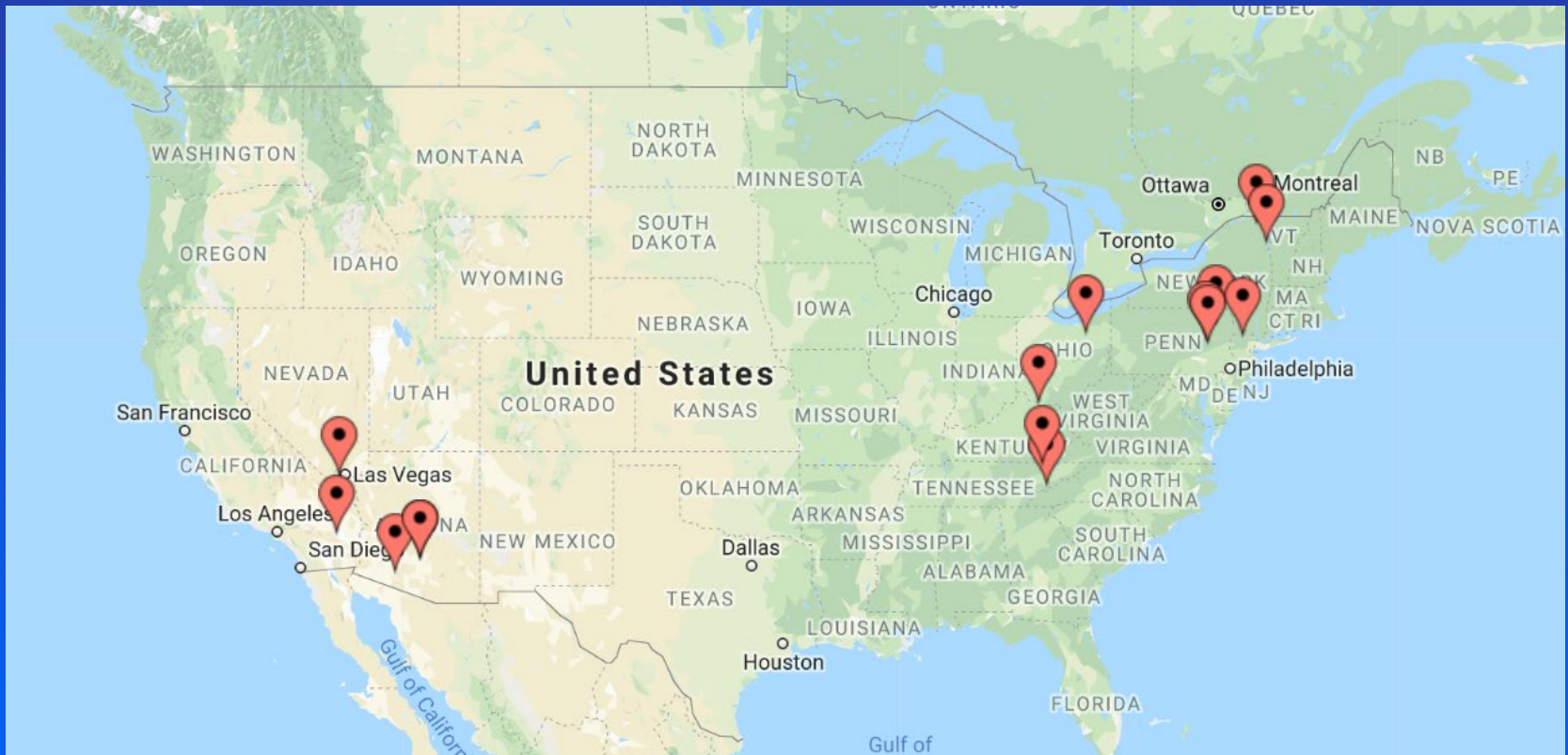


Closed-Loop Pumped Storage Projects at Abandoned Mines





Preliminary Permits for Closed-Loop Pumped Storage Projects at Abandoned Mine Sites- last 20 years





Closed-Loop Pumped Storage Projects at Abandoned Mine Sites – Licenses Issued

Issued 3 licenses for closed-loop projects at abandoned mines in the 1990s.

- Summit Pumped Storage Project, Ohio (P-9423, issued in 1991)
- Mount Hope Pumped Storage Project, New Jersey (P-9401, issued in 1992)
- Blue Diamond Pumped Storage Project, Nevada (P-10756, issued in 1997)

The licenses were terminated due to failure to start construction.



Closed-Loop Pumped Storage Projects at Abandoned Mine Sites – Licenses Issued

Since then we have Issued 1 license, in 2014

- Eagle Mountain, California (P-13123), 1,300 MW
 - Application filed –June 2009
 - License issued – June 2014

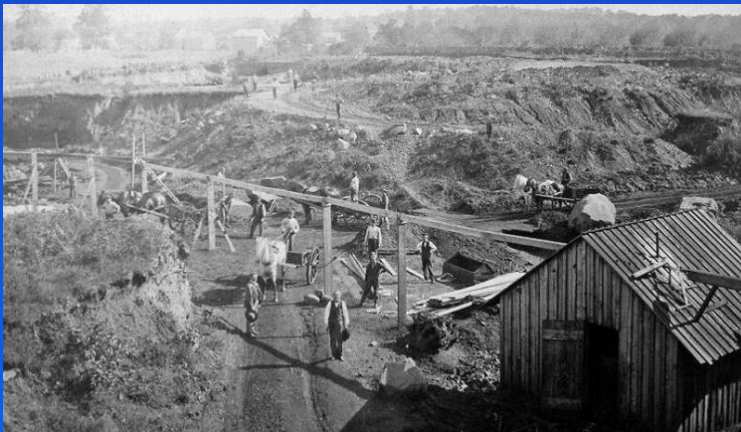




Closed-Loop Pumped Storage Projects at Abandoned Mine Sites - Current License/Permit Status

License application being processed:

- Mineville, NY (240 MW)
 - Application filed (P-12635) –February 2015





Closed-Loop Pumped Storage Projects at Abandoned Mine Sites - Current Permit Status

Nine pending preliminary permit applications

Name	Project No.	State	MW
Big Run	P-14889	WV	1,000 MW
Bechtelsville	P-14959	PA	20 MW
Big Rock	P-14960	VA	20 MW
Eastern Industries	P-14961	PA	20 MW
Myra	P-14962	KY	20 MW
Wrightsville	P-14963	PA	20 MW
Lyon Mountain	P-14692	NY	240 MW
Packer-Banks	P-14966	PA	400 MW
Freestone	P-14967	GA	80 MW

James A. Beshia, Sr., P.E



Carl E. Borgquist



ABSAROKA ENERGY LLC

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Jay W. Hawkins, P.G.

Chief – Water, Geological & Geospatial Branch, Appalachian Region (PGH)



Ken Homolka

Hydropower Program Leader



Michael Manwaring

Water Resources Director, Executive Vice President



Erinn Shirley, MSc.

Abandoned Mine Lands Specialist





Developing Closed-Loop Pumped Storage Projects at Abandoned Mine Sites

Panel Discussion



Developing Closed-Loop Pumped Storage Projects at Abandoned Mine Sites – Site Identification

3.1 How many abandoned mine sites are there in the United States?

What are the types of mine sites and in which states or regions are they typically located?



Developing Closed-Loop Pumped Storage Projects at Abandoned Mine Sites – Site Identification

3.2 How does a developer identify abandoned mines that could be used for pumped storage hydropower?

Are there tools available to identify potential closed-loop pumped storage project sites at abandoned mines?



Developing Closed-Loop Pumped Storage Projects at Abandoned Mine Sites – Site Identification

3.3 What types of abandoned mines are most conducive for closed-loop hydropower development?

What are those characteristics?



Developing Closed-Loop Pumped Storage Projects at Abandoned Mine Sites – Site Identification

3.4 Once a site has been selected, where would a developer look for existing environmental information on the site?



Developing Closed-Loop Pumped Storage Projects at Abandoned Mine Sites – Benefits

3.5 Are there advantages of abandoned mine sites compared to other more conventional pumped storage sites?



Developing Closed-Loop Pumped Storage Projects at Abandoned Mine Sites – Challenges

3.6 What are the challenges of siting closed-loop pumped storage projects at abandoned mine sites?

Are there specific challenges depending on the type of abandoned mines, e.g., coal mine vs hard rock mine?



Developing Closed-Loop Pumped Storage Projects at Abandoned Mine Sites – Challenges

3.7 What are the likely environmental issues a developer could expect at abandoned mine sites?



Developing Closed-Loop Pumped Storage Projects at Abandoned Mine Sites – Challenges

3.8 What are the likely safety and design issues a developer could expect at abandoned mine sites?



Licensing or Permitting Closed-Loop Pumped Storage Projects at Abandoned Mine Sites – Guidance Content

4.1 AWIA 2018 requires FERC to issue guidance to assist applicants for licenses or preliminary permits for closed-loop pumped storage projects at abandoned mine sites.

What types of information would most help in terms of providing such guidance?



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Closed-Loop Pumped Storage Projects At Abandoned Mine Sites Workshop

Thank you