

# Clean Energy and Brownfields:

More Than Just a Climate Change  
Solution

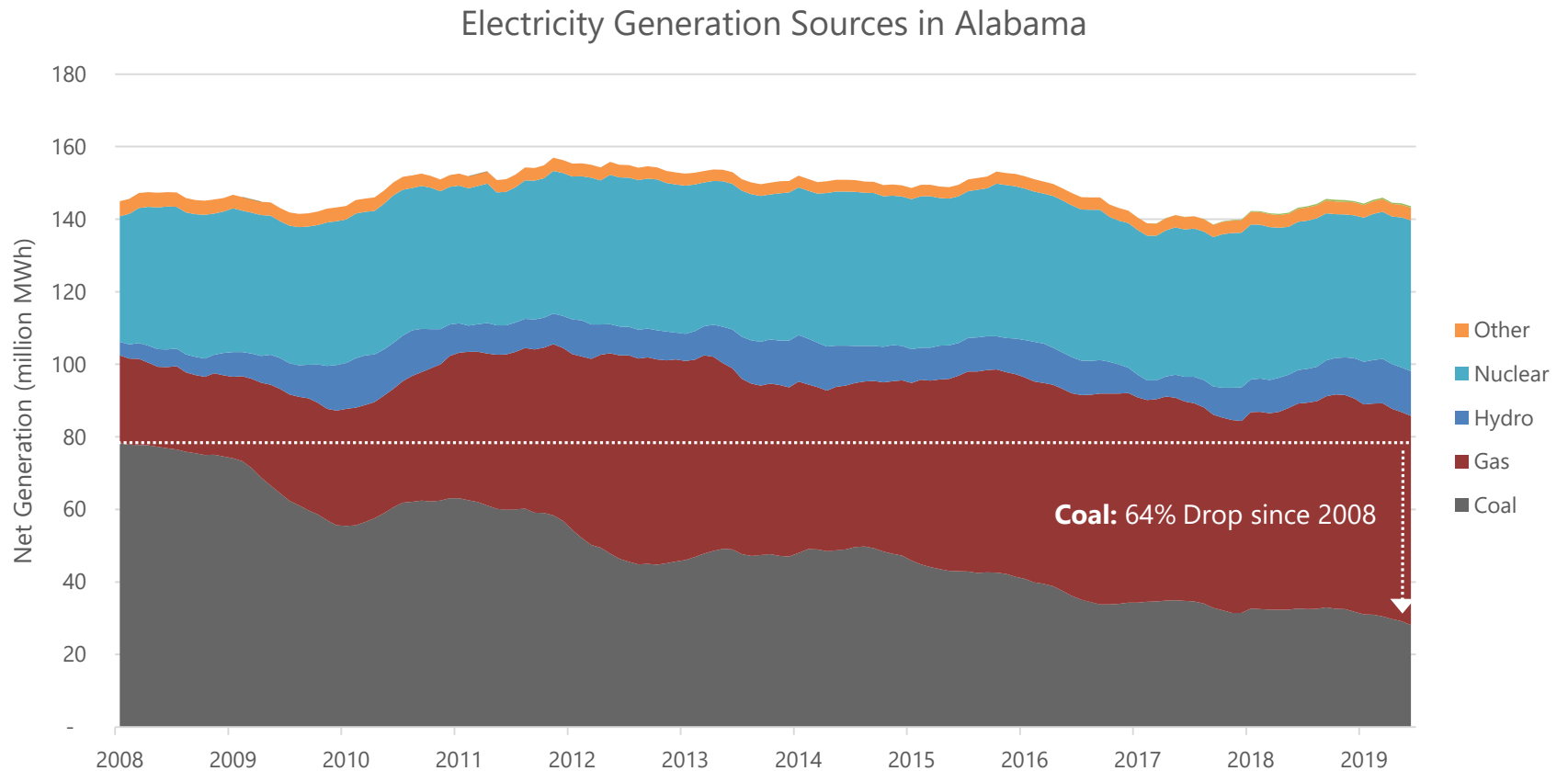


# A Little Sierra Club History



# Coal is going away. Gas will be next.

Even in Alabama...



# Fossil Fuel Sites: Advantages

- Near rivers
- Great electric transmission assets and industrial infrastructure



# Fossil Fuel Sites: Disadvantages

- Frequently very rural – But note EV and energy storage options for those areas
- Legacy contamination





3:46

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# Finding New Opportunity For Old Coal-Fired Power Plant Sites

May 23, 2019 - 5:00 AM ET

Heard on All Things Considered



JEFF BRADY



219 acres along the Susquehanna - Shamokin Dam, PA



# Coal-to-Solar Opportunities

- The [Small Business Liability Relief and Brownfields Revitalization Act](#) ('02) laid out the EPA's best practices for brownfields. Remediated and repurposed brownfield sites have leveraged \$16.11 for every taxpayer dollar spent, led to more than 97,000 jobs, and [increased residential property values 5% to 15.2%](#).
- EPA's project tracker shows coal-to-solar projects at the **Holyoke Gas and Electric (HG&E)** 5.76 MW solar and 3 MW/6MWh battery storage project in Massachusetts and the **Orlando Utilities Commission** 13 MW array in Florida. PPA prices and tax credits can help offset costs. See also: Plant Hammond in Rome (10 MW)

*Source: Utility Dive; 03/08/2018; Herman Trabish*



The former Crawford Power Generating Station was one of the last two coal plants in operation in Chicago until 2012, when power company Midwest Generation closed the facility and its Fisk generating station in Pilsen. The Crawford plant opened in the 1920s. (Jose M. Osorio / Chicago Tribune)

A former coal-fired power plant in Little Village is set to be demolished and replaced with a 21st-century use: warehouses to speed orders for online customers in Chicago.

Northbrook-based Hilco Redevelopment Partners has bought the former Crawford Power Generating Station as part of a \$100 million-plus project to demolish the facility and replace it with up to 1 million square feet of warehouses along Interstate 55, Pulaski Road and the Chicago Sanitary and Ship Canal. No tenant has been signed.



# Green Decommissioning

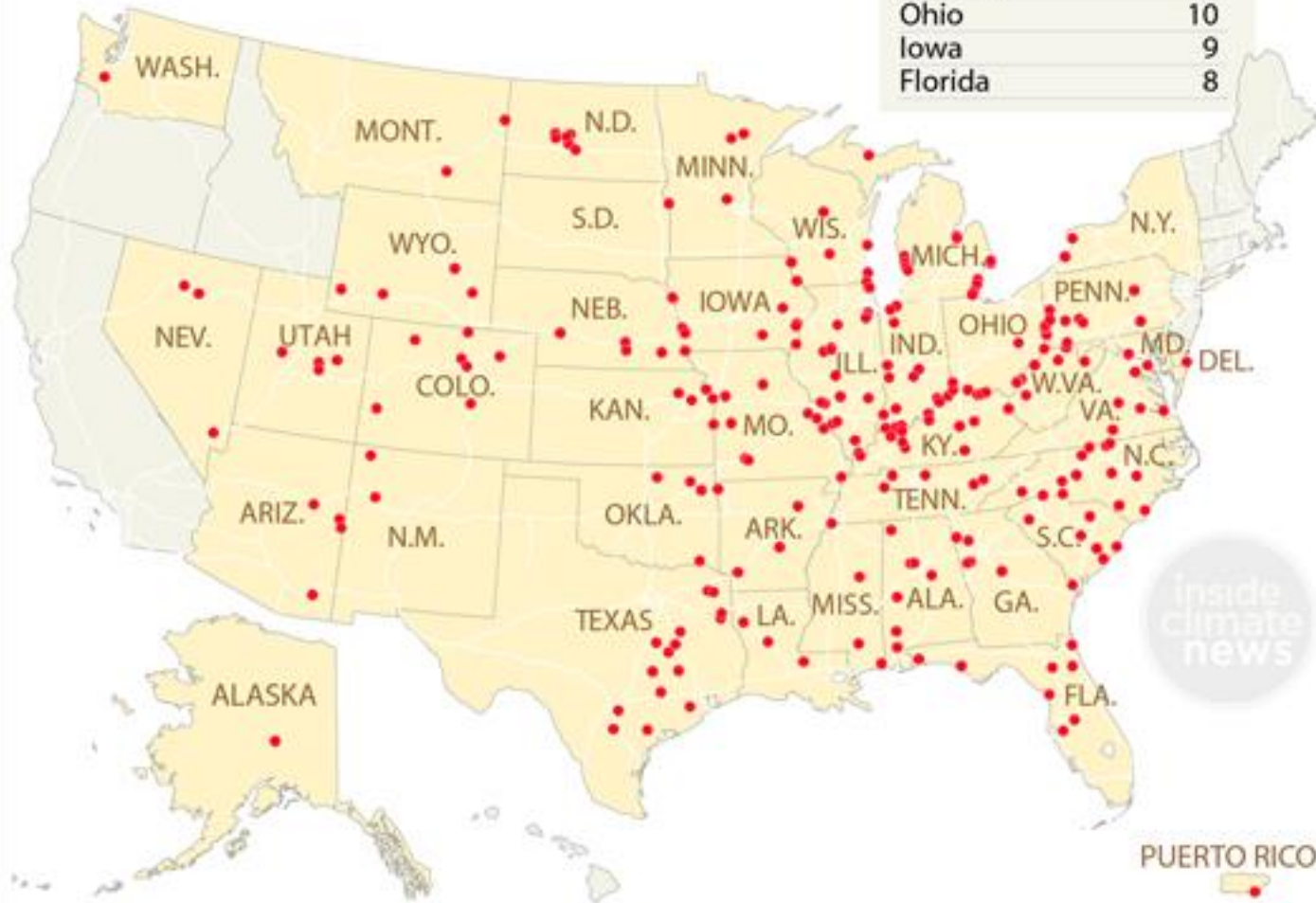
“Decommissioning a power plant and repurposing the site for future use is often a **lengthy and complex process**. Many coal-fired facilities have operated for decades at the same location, and as a result remediation may involve removing asbestos, polychlorinated biphenyls (PCBs), and other constituents from buildings; excavating and disposing of, or covering and capping, CCR surface impoundments; testing and removing concrete pads and soil around old transformers and hydraulic equipment; testing soil for mercury or other air pollution contaminants and removing it if necessary; and monitoring and remediating impacted groundwater.”

# Coal Ash Sites Linked to Groundwater Contamination

A review of groundwater testing at coal ash sites nationwide shows more than 90% of coal-fired power plants have levels exceeding safety standards for at least one contaminant.

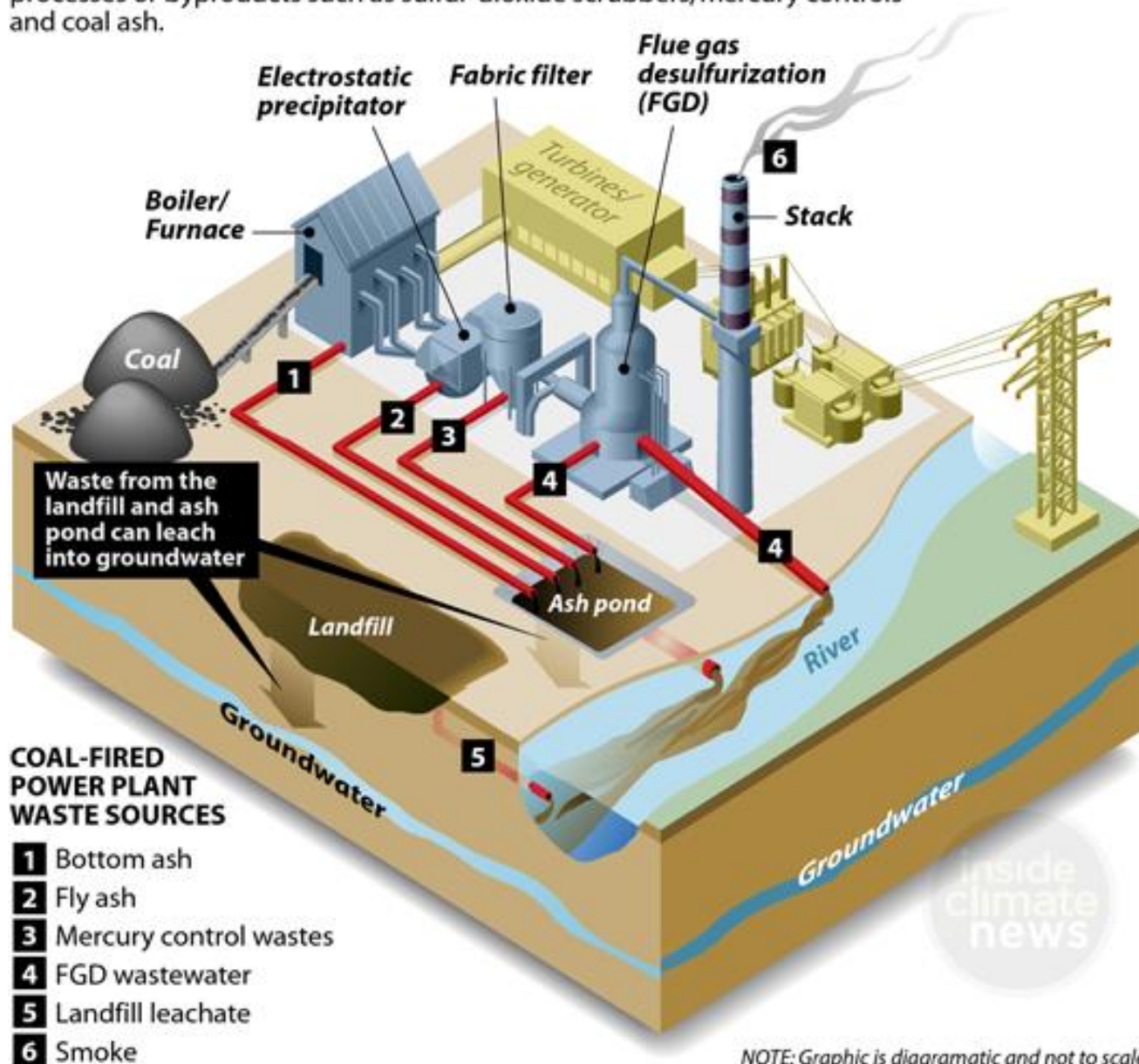
## STATES WITH THE MOST CONTAMINATED SITES

Illinois	16
Texas	15
Indiana	14
Kentucky	14
Michigan	13
North Carolina	13
Missouri	11
Ohio	10
Iowa	9
Florida	8



# Toxic Waters

Wastewater from coal-fired power plants can include heavy metals like arsenic, lead, mercury, selenium and chromium. The metals can come from various processes or byproducts such as sulfur-dioxide scrubbers, mercury controls and coal ash.



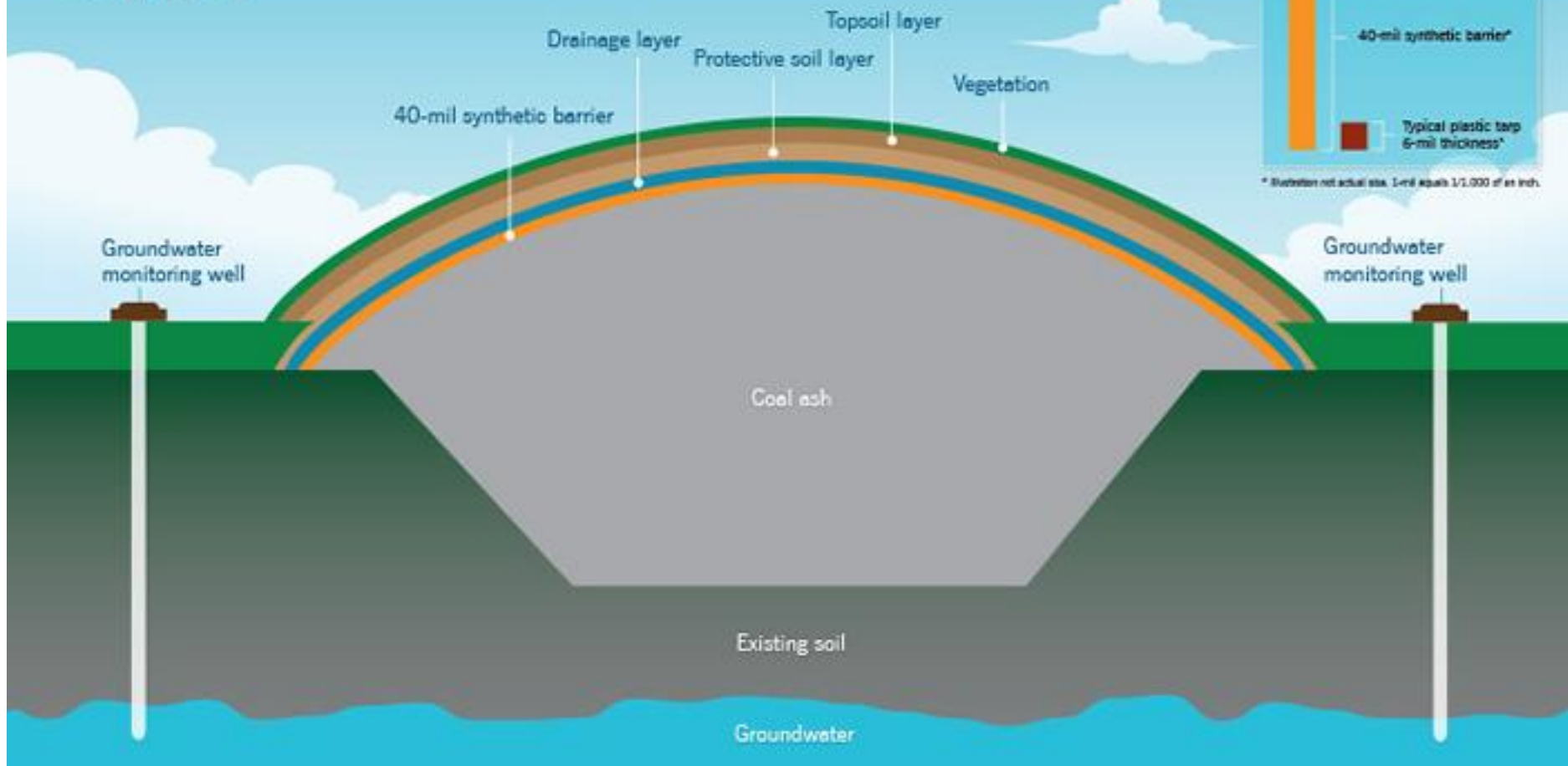
# Wet Ash Pond



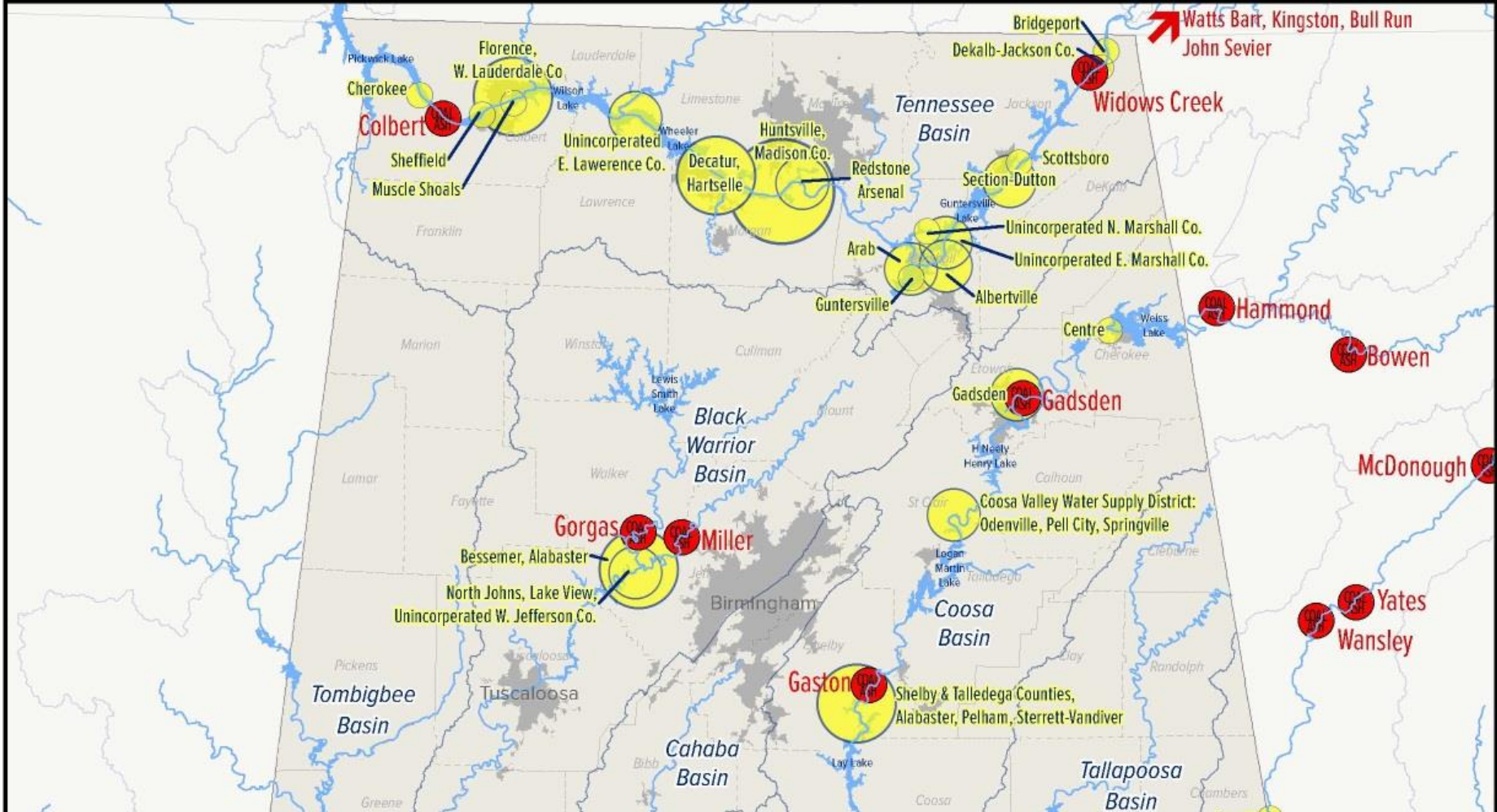




# Engineered Capping System



# Alabama Drinking Water Supplies Downstream from Coal Ash Impoundments



Source: Southern Environmental Law Center

# Coal Ash

- One of the largest industrial waste streams in the US. Nearly **110 million tons** of CCRs were generated by 450+ coal-fired electric plants in 47 states and Puerto Rico in 2012.\* Other estimates range as high as **160 million tons**. *Every year.*
- Don't build on top of ponds that will be excavated
- Re-use: econ. landscape & secondary markets
- Liability landscape: transport, cleanup, storage

*\*Source: The American Coal Ash Association's Coal Combustion Product Production & Use Survey Report*



# Green Decommissioning

- **Audit existing remediation systems.** Audits can show whether your energy-intensive equipment (pumps or blowers,) are set at operating rates or temps higher than required to treat contamination, or larger than needed. An audit also could identify and remove redundancies in treatment or operations and maintenance process.
- **Calculate your environmental footprint.** EPA's model collects energy consumption data for various aspects of remediation.
- **Evaluate energy use.** Track energy consumption through utility-provided meters to learn about usage and identify opportunities where use of energy-efficient measures makes sense.
- **Optimize equipment.** Maintain, inspect, and repair systems in a timely manner to ensure an optimized system.
- **Assess operating conditions.** Evaluate whether it's feasible to take advantage of real-time pricing and operate treatment systems at heavier loads during non-peak hours to lower energy costs and optimize efficiency.
- **Make your day-to-day operations more sustainable.** It may be practical to use cleaner fuels to power vehicles or heavy equipment. Increasing efficiency of the cleanup can also minimize "investigation-derived waste," such as contaminated personal protection equipment, because system operation would require fewer days of field work.

# “Just Transition”



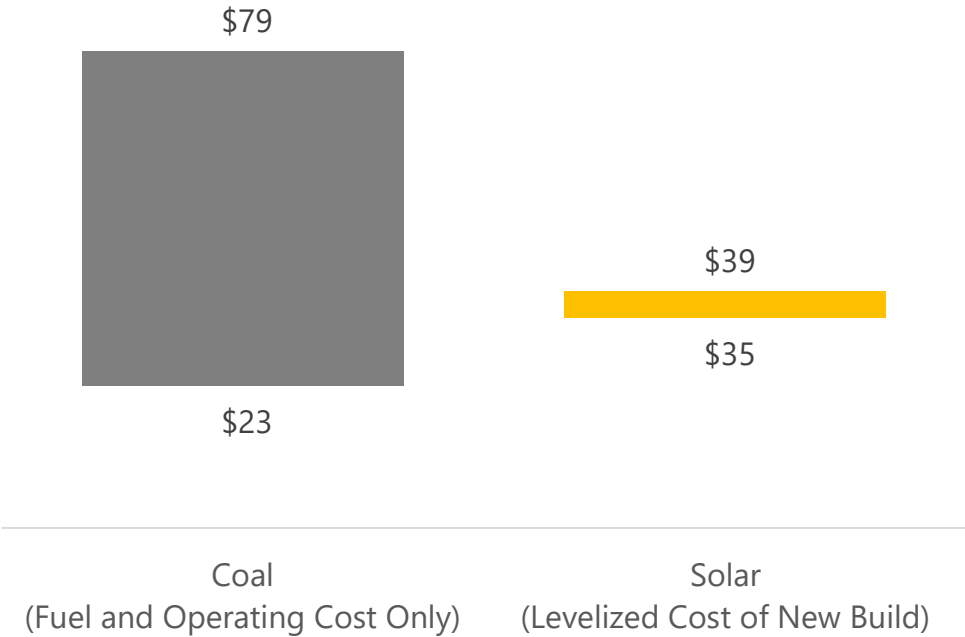


It's no longer about asking people to pay more to do the right thing:

# **CLEAN ENERGY ECONOMICS**

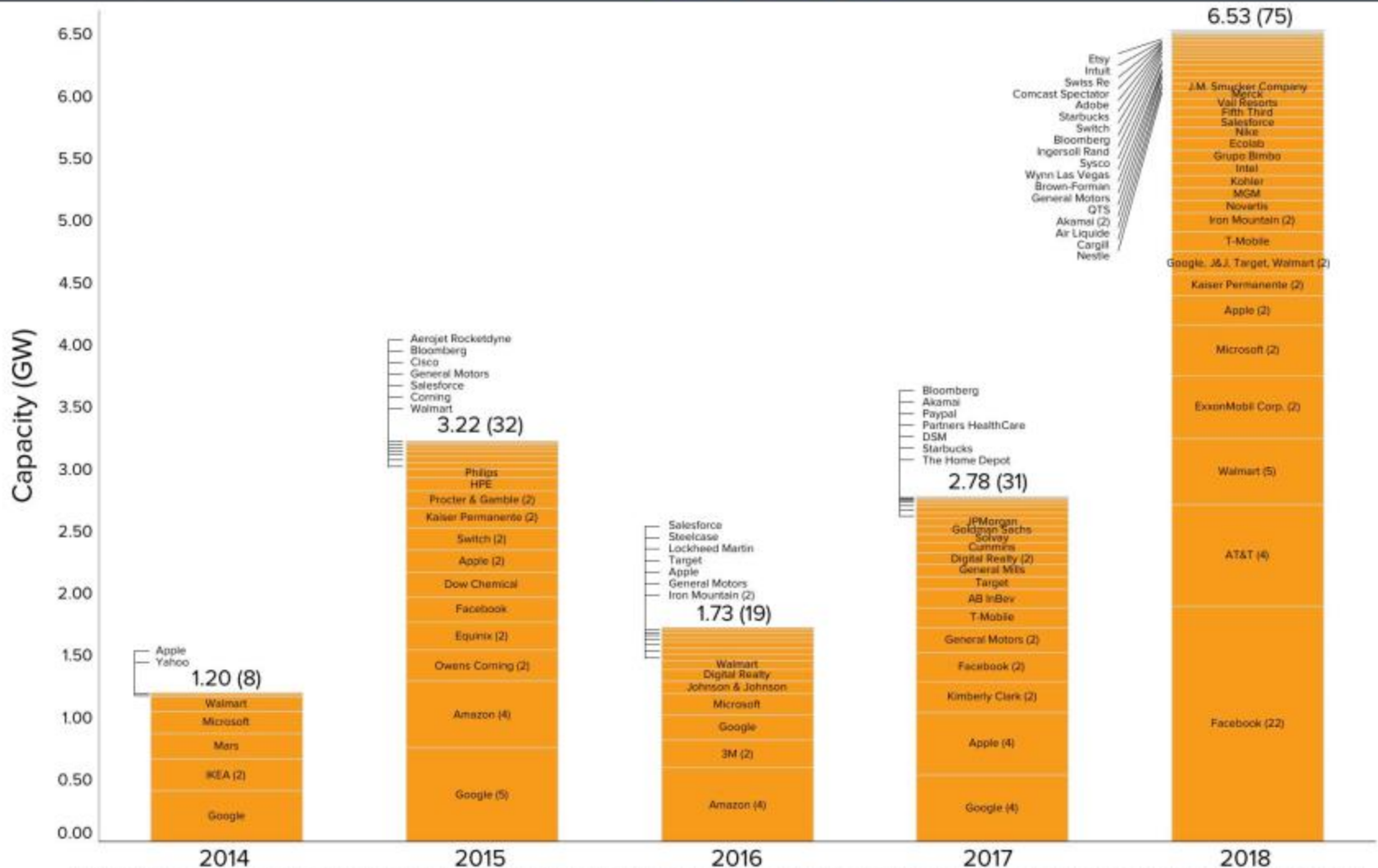
# Clean energy is cheaper than coal

New Solar is Cheaper than Existing Coal in  
AL  
\$/MWh



Sources: S&P Global, VCE

# Corporate Renewable Deals 2014 – 2018



As of December 31, 2018. Publicly announced contracted capacity of corporate Power Purchase Agreements, Green Power Purchases, Green Tariffs, and Outright Project Ownership in the US, 2014 – 2018. Excludes on-site generation (e.g., rooftop solar PV) and deals with operating plants. (#) indicates number of deals each year by individual companies. Copyright 2019 by Renewable Energy Buyers Alliance.

# Policy Landscape



# RECLAIM Act

- Revitalizing the Economy of Coal Communities by Leveraging Local Activities and Investing More
- Bipartisan, but lots of politics around Abandoned Mines Lands policies
- Ballpark: 30 percent of funds can be used for acid mine drainage treatment, 10 percent for project planning and administration and no more than 50 percent can be used for abandoned mine lands reclamation and restoration

# POWER Initiative

As coal-fired power plants continue to close across Pennsylvania, state officials hope they now have a playbook to help find new uses for the properties. The state economic development department recently used a grant from the federal [POWER initiative](#) to develop a series of plans to help speed the decommissioning and redevelopment of coal-fired power plants.

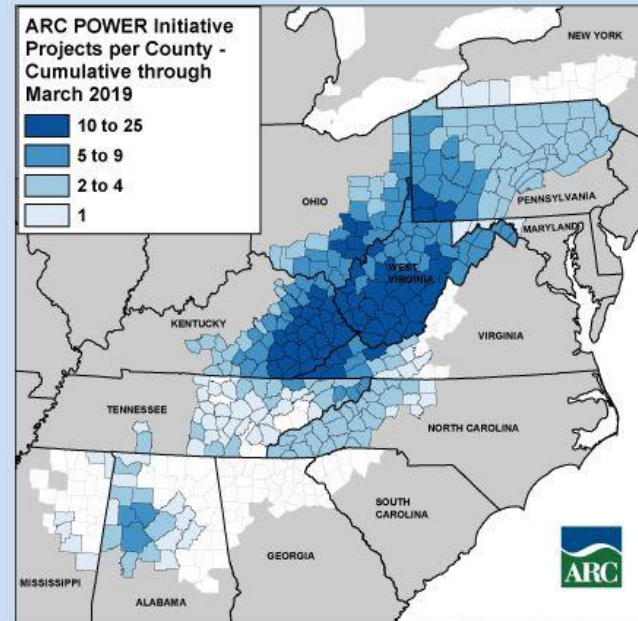


# POWER Initiative

The former **Sunbury Generation Plant**, for example, along the **Susquehanna River** about **50 miles north of Harrisburg**, has already seen transformation. The site was partially redeveloped to accommodate a 1,124-megawatt natural gas-fired plant, which came online last year. The state's playbook looked at other potential reuses on the remaining acreage, including a **solar farm**, **data center**, and another **natural gas-fired plant**.

# Appalachian Regional Commission POWER Initiative

**ARC's POWER investments  
continue economic growth  
in coal-mining counties  
and in communities  
along the Region's coal  
supply chain.**



Appalachian Regional Commission, March 2019

**Alabama:** Bibb, Blount, Chilton, Colbert, Fayette, Franklin, Hale, Jefferson, Lamar, Lauderdale, Marion, Pickens, Shelby, St. Clair, Talladega, Tuscaloosa, Walker, and Winston

# Conclusions:

- Coal is going away
- Fossil sites are a huge opportunity for redevelopment
- Other clean energy opportunities at brownfields
- Power plant legacy pollution is a minus, but it's the utility's responsibility to clean up
- Corporate and industrial customers want clean power and cheap power - renewable development helps deliver on both of these
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