

April 13, 2017, draft

Thomas Hill Energy Center fact sheet

Community & jobs:

- Associated's 2016 property tax payments to Randolph County for its Thomas Hill facilities totaled \$6.4 million.
 - Of that amount, \$4.7 million went to local schools.
- Associated employs 223 full-time employees at its Thomas Hill Energy Center who are actively involved in their local communities.
 - 164 of those employees are represented by the International Brotherhood of Electrical Workers. Weighted average hourly rate for union employees only is \$36.56. That's about \$80,000 annually. In contrast, the 2015 income per capita for Randolph County was \$36,062, per Woods and Poole data.
- Take home pay for all employees at Thomas Hill (union and nonunion) is about \$1.1 million a month.
- Associated owns the Thomas Hill Lake, built to provide cooling water to the plant, and works with the Missouri Department of Conservation to manage its use for recreation and wildlife habitat.
 - Associated owns 30,700 acres at Thomas Hill, including the lake that is about 5,000 acres.
 - Associated leases 11,455 acres to the Missouri Department of Conservation, which includes the lake and about 6,000 acres of surrounding land for fish and wildlife resources and regulation of recreational uses.
- Associated twice has received the U.S. Department of Interior's highest honor for its mine reclamation, which is nearly complete.
 - Of the 16,442 acres once under bond for mine reclamation, Associated only has 807 acres left that is permitted to beneficially use ash to reclaim.
 - Provides bottom ash to counties and cities for beneficially reuse during inclement weather, saving them money and making the roads safer.

Environmental stewardship and compliance

Air quality

- Associated was one of the first utilities in the country to convert its coal units to burn 100 percent low-sulfur coal to meet requirements of the 1990 Clean Air Act Amendments.
 - Associated spent \$552 million to close its Missouri mine and convert to low-sulfur coal at its Thomas Hill and New Madrid power plants – reducing SO₂ emissions 90 percent.
- At both coal plants, AECI added over-fire air technology on all units from 2004-2006 to further reduce NO_x emissions for a cost of \$15.5 million.
- In addition, low-NO_x burners were installed in 2006 on Thomas Hill Unit 3 to reduce NO_x emissions and lower operating costs on SCR environmental controls. This project cost \$7.6 million.

- To further reduce NOx emissions, Associated spent \$423 million to build selective catalytic reduction (SCR) equipment on all three units at Thomas Hill and refurbish Unit 3 electrostatic precipitator to improve capture of fine particulates from emissions. This was done by Jan. 1, 2009, to meet Clean Air Interstate Rule, which was later replaced with Cross-State Air Pollution Rule.
- To reduce mercury emissions, Associated pioneered use of refined coal in 2010 at Thomas Hill Energy Center to reduce mercury emissions years before the Mercury Air Toxics Standards compliance date in 2016. Example of innovation that did not increase costs for members. Associated took advantage of George W. Bush-era stimulus package.
- In 2016, Associated installed sorbent traps to monitor mercury emissions per MATS standards. Mercury emissions cost in 2016 totaled \$348,052.
- Installed activated carbon injection systems on all three units at Thomas Hill to meet MATS at a cost of \$6.5 million.
- Refurbished Thomas Hill Unit 2 electrostatic precipitator at a cost of about \$9.3 million for MATS compliance.
- Today, Associated's mercury emissions are below the MATS requirements.

Coal Combustion Residuals rule

- In preparation for the CCR rule, Associated converted to a dry fly ash handling system at Thomas Hill Energy Center at a cost of \$2.4 million.
- Since then, it's invested an additional \$714,000 on projects, including:
 - Installed additional groundwater wells for monitoring as required by CCR and is working with an engineering firm to establish a baseline from monitoring results as required by CCR rule.
 - Hired a geotechnical firm to inspect, document and certify ash pond dam and then write management, flood and post-closure plans.
 - Closing an ash pond, using in-house staff as available.
 - Moved 301,928 tons of bottom ash in 8,284 truckloads to close an area that had been used by a contractor to recycle bottom ash, which could no longer be stored on the ground under the CCR rule. Associated then constructed a pad for temporary storage of bottom ash, which can then be loaded out for disposal or recycling.

Stewardship extends to wildlife and more

- Hatched peregrine falcon chicks from its power plant in past, and last year two peregrine chicks fledged from a nest box on the Unit 3 emissions stack. Eagles are also a common site and have nested the last few years on Associated's property.
- Partnered with BNSF Railway on pilot project for liquefied-natural-gas powered locomotives bringing coal to the power plant.
- Associated Electric Cooperative and Association of Missouri Electric Cooperatives are part of a statewide collaboration to help restore monarch butterfly populations.
- Associated has donated use of land at Thomas Hill for wildlife habitat research and a soil-conservation project by county soil and water conservation district and state agencies and universities.

- Partnered to develop an agreement with U.S. Fish and Wildlife Service to reach an agreement that allows member systems to construct and maintain transmission facilities while protecting endangered species.

Upcoming issues, in addition to carbon emissions regulations, focus on land and water:

- Final *Clean Water Act Effluent Limitation Guidelines* now include Thomas Hill units 1 and 2, which were previously excluded under the draft rule. Compliance timelines tied to discharge permit renewals between 2018-2023.
- Associated will have to convert to a dry bottom-ash handling system to meet Coal Combustion Residuals rule and Effluent Limitation Guidelines. Staff has not devised a solution for Thomas Hill yet, but the bottom ash system at the cooperative's New Madrid plant will cost about \$30 million.
- Need continued support from the Office of Surface Mining and EPA for beneficially reusing coal ash to reclaim mine property (CCR and ELG Rule). Eliminating this use would increase ash disposal costs, possibly requiring construction of a utility landfill, and also increase mine reclamation costs.
- Need risk-based approach to closing surface impoundments and ash ponds and remediating ground water impacts (CCR Rule).
- Missouri has risk-based standard, which about 40 states do, which is cost-effective way to improve water quality.
- Changes to water treatment to meet new ELG limits is another potential impact at Thomas Hill, which now has its own water treatment facility to produce potable water.
- Section 316(b) of the Clean Water Act also may require some modification of water intakes for the plant on the lake; however, this will be a larger and very significant cost at Associated's New Madrid Power Plant.