



# OHIO AIR QUALITY DEVELOPMENT AUTHORITY

## 2009 Annual Report





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The final audit statements from the Ohio Auditor of State were presented to OAQDA in October 2010.



Letter to our Stakeholders:

2009 was a worthy prelude to an important milestone for the Ohio Air Quality Development Authority (OAQDA). It was a year when OAQDA solidified its role as a lead state agency in addressing Governor Ted Strickland's goal of emphasizing Ohio's place as an advanced energy leader. The milestone is our agency's 40-year anniversary, which was officially observed in June 2010.

Most significantly, OAQDA approved the first three projects from the \$150 million Advanced Energy Job Stimulus Program in June 2009. (One of these was later withdrawn at the request of the applicant because of unexpected changes in the financial marketplace.) OAQDA finished the year approving a total of seven non-coal projects from the stimulus program and four from the coal portion of the program. Collectively, these projects met the program mission by creating 1,588 advanced energy full-time jobs and retaining another 791, according to the stated job creation figures provided by the applicants. Fact sheets and news releases for each project can be found on the Advanced Energy Program tab on the OAQDA home page, at: [www.ohioairquality.org](http://www.ohioairquality.org).

OAQDA continued to fulfill its other responsibilities during 2009 by assisting small and large Ohio businesses, as well as several state agencies, in acquiring and installing new equipment and facilities to reduce hazardous air emissions and cut energy costs. In addition, OAQDA approved several two-year clean coal research projects at Ohio universities.

We are proud of the trust placed in OAQDA by the Strickland Administration, as evidenced by the Authority's expanded role and responsibilities in the area of advanced energy. We are especially pleased to be engaged so actively in helping create the advanced energy jobs of tomorrow for the people of Ohio.

Respectfully,

**Gayle Channing Tenenbaum**  
Chair

**Mark R. Shanahan**  
Executive Director and the Governor's Energy Advisor

**40<sup>th</sup>**  
ANNIVERSARY  
MILESTONE

*\*Because this annual report for 2009 is published in 2010, we have included some milestones regarding OAQDA's 40 years of service in the body of this report.*

# 2009 OAQDA Highlights

## *A month-by-month review of investment, research and leadership*

### January

Ohio's ongoing leadership in clean coal technology was emphasized by the authorization of two Ohio Coal Development Office (OCDO) grants.

OAQDA authorized a \$2,294,901 grant to Energy Industries of Ohio to co-fund phase two of the Advanced Ultrasuper Critical Turbine Program, which uses high-nickel alloys to build large metalcastings for power plant turbine casings. Other program participants include the U.S. Department of Energy; Alstom Power, Inc.; General Electric; the Electric Power Research Institute and the Foundry Research Institute Center for High Temperature Studies of Metals and Alloys in Krakow, Poland. Total project cost is \$10,800,077.

OAQDA also authorized a \$250,000 OCDO grant to Touchstone Research Laboratory to co-fund the design of a 10 million BTU hybrid fluidized bed gasifier for heating greenhouses at Cedar Lane Farms in Wooster (Wayne County). The project's other participant is the U.S. Department of Energy National Energy Technology Laboratory (USDOE-NETL). Total project cost is \$539,938

### March

To take advantage of a provision in the federal stimulus legislation, FirstEnergy Nuclear Generation Corporation requested and received issuance by OAQDA of up to \$119,500,000 in bonds to assist in the refinancing of four outstanding OAQDA bonds. The federal legislation permits bonds that were subject to the federal Alternative Minimum Tax to be refinanced by bonds not subject to the tax. FirstEnergy sought the refinancing in the hope of expanding the potential pool of buyers and generating long-term interest savings.

### May

OAQDA approved a resolution authorizing the Executive Director to request issuance of \$84,000,000 in bonds to support the non-coal portion of the Ohio Advanced Energy Job Stimulus Program, to be accomplished in three annual installments of \$28,000,000. The first such issuance was performed by the Ohio Treasurer of State's office in November.

### June

OAQDA's June meeting was one of the most historic impactful meetings in recent years. Actions taken included the authorization of the first three projects from the \$150,000,000 Advanced Energy Job Stimulus Program. Those were:

- A loan award of up to \$10,000,000 for a non-coal, solar energy project by Willard & Kelsey of Toledo (Lucas County). The project's purpose is to expand the company's solar panel manufacturing capacity, creating 1,200 new full-time jobs over the project's three-year time span while retaining another 400 full-time jobs.
- An OCDO grant award of up to \$30,000,000 to AMP-Ohio for the construction of a coal-based power plant in Letart Falls (Meigs County). The project was later withdrawn by AMP-Ohio because of unforeseen changes in the financial marketplace.

*Willard & Kelsey was the recipient of the first project authorized by OAQDA under the Advanced Energy Job Stimulus Program. The Toledo company received a \$10 million loan in June to expand its solar panel manufacturing capacity and expects to create 1,200 new full-time jobs and retain 400 jobs.*

# 40<sup>th</sup> ANNIVERSARY MILESTONE

OAQDA co-funded its first air pollution university research project in 1978 at The Ohio State University and its first co-funded clean coal university research project in 1979 at Ohio University.

- An OCDO grant award of up to \$324,717 for a coal project at The Ohio State University entitled “Coal Combustion Products Extension Program.” The grant was a continuation of OCDO’s long-standing support for the program, which promotes productive uses of coal combustion byproducts that would otherwise be placed in landfills.

## June

In other June action, OAQDA:

- Authorized \$66,000,000 in OCDO bonds to fund the coal portion of the Advanced Energy Job Stimulus Program.
- Approved an OCDO grant of up to \$40,000 to support an expansion of the work scope of the Cooperative Research and Development Agreement between OCDO and USDOE-NETL.
- Authorized a bond issuance of up to \$18,000,000 to Manure Management Industries, LLC of Defiance County to assist in financing the acquisition, construction and installation of a manure treatment facility to generate steam for electricity.

In addition, long-time OAQDA employee Janis Ivory retired on June 30 after 25 years of dedicated state service.

## July

Three state-run correctional facilities in Lorain County received OAQDA approval for up to \$3,500,000 in bond financing for energy efficiency and conservation projects. The projects at Grafton

Correctional, Lorain Correctional and North Coast Correctional Institutions will include lighting retrofits and improvements to the HVAC and steam heat systems. The energy saved will amount to 2.7 million KWH and 198,880 therms of natural gas, resulting in the annual reduction of 3,694 metric tons of carbon dioxide emissions. The three institutions will realize a combined annual savings of \$459,233 in utility costs.

*Three state correctional facilities in Lorain County received \$3.5 million in OAQDA financing in July for energy efficiency and conservation projects. Grafton Correctional, Lorain Correctional and North Coast Correctional expect to cut annual carbon dioxide emissions by nearly 3.7 million metric tons and save \$459,233 in utility costs.*

## August

OAQDA moved further into its advanced energy financing leadership position following authorization of a resolution to implement a program to allocate Ohio’s bond cap for Qualified Energy Conservation Bonds (QECB). These bonds were created by the American Recovery and Reinvestment Act (ARRA) – the federal stimulus program. Ohio’s 2009 QECB cap was set at \$119,160,000. QECBs are tax credit bonds that may be used by public institutions for energy projects. They can be issued with a zero percent interest rate to the borrower, with the bond holders receiving federal tax credits.

# 40<sup>th</sup> ANNIVERSARY MILESTONE

Since 1979, when Ohio’s environmental data were deemed reliable:

- Sulfur dioxide levels dropped 76%
- Carbon monoxide levels dropped 75%
- Nitrogen oxide levels dropped 27%

## September

Underscoring its long-standing mission to assist small Ohio businesses, OAQDA authorized a bond of up to \$50,000 to help Highlander Cleaning Centers, Inc., of Newark (Licking County) purchase a new hybrid dry cleaning machine that would permit the company to cease the use of a hazardous cleaning solvent. Highlander expects to create up to five new full-time jobs as a result of the purchase and has cut its utility bills by two-thirds and hazardous waste emissions by 95 percent.

OAQDA also authorized its third coal stimulus project through an OCDO grant of up to \$158,459 for continuation of the project “Studies of the Syngas Chemical Looping Process” at The Ohio State University.

*Highlander Cleaning Centers, Inc., of Newark received \$50,000 in financing from OAQDA in September to purchase a new hybrid dry cleaning machine that would enable the company to cease using a hazardous cleaning solvent. Highlander expects to cut its utility bills by two-thirds and hazardous water emissions by 95 percent.*

## October

An innovative project aimed at reclaiming abandoned mine lands around Ohio was authorized for funding from the Advanced Energy Job Stimulus Program. The project, consisting of two sites located at coal-based power plants in Conesville (Coshocton County) and Brilliant (Jefferson County), was approved for an OCDO grant of \$1,436,035. It is to be conducted by The Ohio State University, is titled “Reclamation of Ohio Coal Mine Sites Using FGD (Flue Gas Desulfurization) Byproducts: Phase II Demonstration Projects.” Other funding partners

for the total \$5,052,397 project include American Electric Power; Ohio Energy, Inc.; the Electric Power Research Institute; the Ohio Department of Natural Resources; the U.S. Department of the Interior and Environmental Protection Agency; the American and Midwest Coal Ash Association and the Ohio Mine Land Partnership.

## November

A nine-hole golf course and campus-style office park will one day occupy the site of an old landfill in Gahanna (Franklin County) thanks in part to the authorization of an OAQDA bond of up to \$2,600,000. The funds will be used in the final capping of the landfill and installation of a methane-capture system. The landfill site is owned by the Central Ohio Community Improvement Corporation.

## December

OAQDA authorized seven awards from the Advanced Energy Job Stimulus Program, including six non-coal projects and one coal project. The seven projects will create 397 full-time jobs and retain another 516 full-time jobs. The six non-coal projects received loan awards as follows:

- \$1,530,000 to Ohio Cooperative Solar of Cleveland (Cuyahoga County) to assist with the installation of photovoltaic solar panel modules on the roofs of commercial buildings for customers in the University Circle area of the city.
- \$3,060,000 to Schmack BioEnergy, LLC, of Columbus (Franklin County) for the construction of an anaerobic digester system. The company shortly thereafter changed its name to quasar energy group. The facility is designed to accept and digest multiple streams of organic waste, capturing biogas in the process.

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*The William H. Zimmer power plant in Moscow (Clermont County) has received more financing dollars from OAQDA than any other facility, totaling \$373 million since receiving its first funding in 1985.*

- \$2,537,500 to Technology Management, Inc., of Highland Heights (Cuyahoga County) to assist in the commercialization of its solid oxide fuel cell (SOFC) technology. The project targets the military market for replacement of kilowatt class diesel gensets with the SOFC technology.
- \$838,440 to Wayne Trail Technologies, Inc., of Fort Loramie (Shelby County) to assist in the establishment of a manufacturing process used in lithium-ion battery packs – the type of batteries used to power hybrid electric vehicles.
- \$2,040,000 to Westerman Nuclear, LLC, of Bremen (Fairfield County) for construction of a new manufacturing facility to supply components to the nuclear industry in the U.S. and around the world.
- \$4,060,000 to Xunlight Corporation of Toledo (Lucas County) for a significant expansion of its manufacturing facilities for the production of amorphous silicon thin-film photovoltaic modules.

OAQDA also authorized a \$330,586 OCDO grant to InSeT Systems, LLC, of Beallsville (Belmont County) to expand the company's patented Internal Sensor Tracking system, which provides the capability of real-time tracking of miners working in underground mines.



*William H. Zimmer Power Plant, Moscow, OH*

*In December, OAQDA authorized a one-month record funding of nearly \$14.4 million for six non-coal projects from the Advanced Energy Job Stimulus Program and one coal project. Combined, the projects will create an expected 397 full-time jobs and retain another 516 jobs.*

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*In 1988, OAQDA began providing financial support for special projects aimed at mitigating air quality threats such as asbestos and radon.*

# Clean Coal Technology Support

Every year, OAQDA reaffirms its ongoing support of clean coal technology research, development and deployment by approving funding from the Ohio Coal Development Office to assist the groundbreaking work of Ohio's university researchers. In July 2009, OAQDA authorized \$1,120,000 for seven clean coal research projects at three Ohio universities.

Each two-year grant was funded for the 2009-2010 and 2010-2011 academic years. With an additional \$366,694 in co-funding by the participating universities, the total funded amount for the seven projects is \$1,486,962. All seven projects were reviewed and recommended for funding by the Ohio Coal Research Consortium review team and by OCDO's director, staff and Technical Advisory Committee. As in the past, Ohio University will administer the program over the two-year period.

The [seven OCDO grants](#) are listed below by category, according to the objectives of the OCDO Strategic Plan.

## Strategic Objective #1

*Maximize the use of coal, including expanding the use of coal beyond electricity generation, to supply Ohio's energy needs.*

- \$160,000 for a **University of Cincinnati** project that addresses the capture of oxidized and elemental mercury from the flue gases at coal-based power plants. The objective is to capture mercury in a form that can be maintained in an isolated waste stream that can be treated for long term economic and environmentally safe disposal. Despite its support for this project, the Consortium review team decided to make its funding contingent on the results of a similar project now being undertaken at the university and at the U.S. Environmental Protection Agency pilot plant at the Research Triangle Park in North Carolina. It is hoped that the project now under way will shed light on the commercial viability of the chemical process being tested. University share: \$44,071

## Strategic Objective #2

*Reduce the environmental impact of continued, as well as additional, coal usage.*

### Geologic Sequestration

- \$160,000 to fund a project at **Ohio University** aimed at studying corrosion rates in pipelines transporting carbon dioxide (CO<sub>2</sub>). The project will target corrosion caused by possible impurities in the CO<sub>2</sub> including oxygen, sulfur dioxide, nitrogen and hydrogen sulfide. While the Consortium review team was quite interested in this project, it felt that the project's statement of work needed to be more focused. A deadline of September 1, 2009 was established for submission of a new statement. The university revised its statement of work before the deadline, and work on the project is proceeding. University share: \$41,592.

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*The Clean Air Resource Center was established within OAQDA in 1996 to provide additional assistance to help small businesses with pollution control projects.*

### Strategic Objective #3

Support university research through the Ohio Coal Research Consortium.

#### Conversion of Coal to Power or Chemicals – CO<sub>2</sub> – Ready for Sequestration

- \$160,000 for a project at **The Ohio State University** that will use calcium in a “chemical looping” process that enables the conversion of coal syngas to hydrogen. (Syngas is a mixture that contains varying amounts of carbon monoxide and hydrogen.) The project is similar to a second project at the university that uses iron rather than calcium. Both processes are deemed by reviewers to have a high potential for commercial success. University share: \$53,994.
- \$160,000 to fund a project at **The Ohio State University** that will address separation of carbon dioxide from flue gas using ceramic membranes supported on organic polymers. The project combines the proven separation capacity of ceramic membranes with the polymer’s properties that allow formation of the membrane in the shapes best suited for commercial applications. This project has the potential to help reduce the costs involved in membrane fabrication and in commercial operation. University share: \$40,008.

#### Catalysts and Membrane Systems for Water Gas Shift of Syngas to Hydrogen

- \$160,000 to fund a project at the **University of Cincinnati** and **The Ohio State University** to evaluate the use of catalytic membrane reactors for the production of hydrogen in coal gasification systems. A goal of the project is to increase the possible temperature for complete water-gas shift reactions.

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OAQDA approved its smallest-ever financing project in 1999 to Scottie McBean’s restaurant in the Columbus suburb of Worthington.

(Water-gas shift is the chemical reaction between water and carbon monoxide that results in the formation of carbon dioxide and hydrogen.) This would allow the reaction to proceed faster and reduce the size requirements of the reactor. A second project goal is to reduce the amount of water needed in water-gas shift reaction, which could further reduce costs. University share: \$51,495.

- \$160,000 for a University of Cincinnati project that targets an improved method for separating hydrogen gas from carbon dioxide during coal combustion. University researchers will prepare ceramic membranes for use in small pipes that will be tested by the U.S. Department of Energy’s National Energy Technology Laboratory (NETL). In addition, two industrial partners – Pall Corp and Air Products – will provide an estimated \$110,000 in support of the project. University share: \$51,495.

#### Catalysts and Membrane Systems for Water Gas Shift of Syngas to Hydrogen

- \$160,000 for another **University of Cincinnati** project to address the now-cost-prohibitive challenge of separating oxygen from air. The project has the potential to allow oxygen, instead of air, to be used as a combustion gas in boilers retrofitted to improve the capture of carbon dioxide during combustion. It will evaluate metal-organic membranes for potential use in oxygen-air separation. University share: \$84,307.

# 2009 OAQDA Projects

## 2009 OAQDA Projects

Month	Company	Amount	Program
February	The Ohio State University	\$ 206,299	OCDO
January	Energy Industries of Ohio	\$ 2,294,901	OCDO
	Touchstone Research Laboratory	\$ 250,000	OCDO
February	Colerain Trailer Center	\$ 175,047	Financing
March	FirstEnergy Nuclear Corporation	\$ 119,500,000	Financing
May	FirstEnergy Generation Corp.	\$ 241,260,000	Financing
June	Manure Management Industries, LLC	\$ 18,000,000	Financing
	<a href="#">Willard &amp; Kelsey</a>	\$ 10,000,000	Stimulus (Loan)
	<a href="#">AMP-Ohio*</a>	\$ 30,000,000	Stimulus
	<a href="#">The Ohio State University</a>	\$ 324,717	Stimulus
July	Ohio Coal Research Consortium	\$ 1,120,000	OCDO
	Ameresco	\$ 3,500,000	Financing
August	Columbus Southern Power	\$ 92,245,000	Financing
September	Highlander Cleaning Center, Inc.	\$ 50,000	Financing
October	<a href="#">The Ohio State University</a>	\$ 1,436,035	Stimulus
November	Central Ohio Community Improvement Corporation	\$ 2,600,000	Financing
December	<a href="#">Ohio Cooperative Solar</a>	\$ 1,530,000	Stimulus
	<a href="#">quasar energy group/Schmack Biomass</a>	\$ 3,060,000	Stimulus
	<a href="#">Technology Management, Inc.</a>	\$ 2,537,500	Stimulus
	<a href="#">Wayne Trail Technologies, Inc.</a>	\$ 838,440	Stimulus
	<a href="#">Westerman Nuclear, LLC</a>	\$ 2,040,000	Stimulus
	<a href="#">Xunlight Corporation</a>	\$ 4,060,000	Stimulus
	InSeT Systems	\$ 330,586	Stimulus
	Zanesville Energy, LLC	\$ 3,000,000	Financing
	Buckeye Biogas, LLC	\$ 3,000,000	Financing
	Center City International Truck, Inc.	\$ 50,000	Financing

\*Project subsequently was withdrawn by AMP-Ohio.

# 2009 Financial Statement

## Ohio Air Quality Development Authority Statement of Net Assets

December 31, 2009

	Air Quality Development	Energy Strategy Development	Total
<b>ASSETS</b>			
Current Assets:			
• Cash and cash equivalents	\$ 11,327,947	\$ 27,892,726	\$ 39,220,673
• Accounts receivable	13,000	—	13,000
• Due from other funds	30,943	—	30,943
• Prepaid items	6,132	907	7,039
Noncurrent Assets:			
• Capital assets, net of accumulated depreciation	21,403	—	21,403
<b>Total Assets</b>	<b>11,399,425</b>	<b>27,893,633</b>	<b>39,293,058</b>
<b>LIABILITIES</b>			
Current Liabilities:			
• Accounts payable	147,274	3,620	150,894
• Accrued wages and benefits	14,943	5,783	20,726
• Due to other funds	—	11,766	11,766
<b>Total Liabilities</b>	<b>162,217</b>	<b>21,169</b>	<b>183,386</b>
<b>NET ASSETS</b>			
Invested in capital assets	21,403	—	21,403
Restricted for:			
• Ohio Advanced Energy Projects	—	27,738,470	27,738,470
Unrestricted	11,215,805	133,994	11,349,799
<b>Total Net Assets</b>	<b>\$ 11,237,208</b>	<b>\$ 27,872,464</b>	<b>\$ 39,109,672</b>

The final audit statements from the Ohio Auditor of State were presented to OAQDA in October 2010.

Contact the Ohio Air Quality Development Authority for notes to the basic financial statements.

# 2009 Financial Statement, cont.

## Ohio Air Quality Development Authority Statement of Activities For the year ending December 31, 2009

	Program Revenues			Net (Expense) Revenue and Changes in Net Assets		
	Expenses	Charges for Services	Operating Grants	Governmental Activity	Business-Type Activity	Total
<b>GOVERNMENTAL ACTIVITY</b>						
Community and economic development	\$ 3,665,145	\$ —	\$ 42,585,969	\$ 38,920,824		\$ 38,920,824
<b>BUSINESS-TYPE ACTIVITY</b>						
Air quality development	\$ 1,087,924	2,199,540	547,567		1,659,183	1,659,183
Energy Strategy development	\$ 270,917	—	225,000		(45,917)	(45,917)
Total business-type activities	\$1,358,841	2,199,540	772,567		1,613,266	1,613,266
<b>Total</b>	<b>\$5,023,986</b>	<b>2,199,540</b>	<b>43,358,536</b>	<b>38,920,824</b>	<b>1,613,266</b>	<b>40,534,090</b>
General Revenues:						
• General state assistance				—	27,738,470	27,738,470
• Investment earnings				40,413	1,127	41,540
• Miscellaneous				3,366	746	4,112
• Transfers				39,550	(39,550)	—
Total general revenues				83,329	27,700,793	27,784,122
Changes in net assets				39,004,153	29,314,059	68,318,212
Net assets at beginning of year – Restated				2,441,220	9,795,613	12,236,833
Net assets at end of year				\$ 41,445,373	\$ 39,109,672	\$ 80,555,045

Contact the Ohio Air Quality Development Authority for notes to the basic financial statements.

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*The Ohio Coal  
Development Office,  
established in 1984,  
was transferred to  
OAQDA in 2003 by  
the Ohio General  
Assembly.*

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*The R. E. Burger  
power plant in  
Shadyside (Belmont  
County) completed  
a successful six-  
month test in 2005  
of multi-pollution  
control technology  
funded in part by  
\$4.5 million in  
OAQDA financing.*

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*OAQDA was named  
administering agency  
for the \$150 million  
Ohio Advanced  
Energy Job Stimulus  
Program in 2008.*

## **2009 Ohio Air Quality Development Authority Members**

Gayle Channing-Tenenbaum, *Chair*, Columbus

David M. Benjamin, *Vice Chair*, Aurora

Clifford R. Cloud, *Secretary-Treasurer*, Columbus

Vincent A. Russo, Highland Heights

James B. Fogler, Broadview Heights

Jeffrey M. Jacobson, Columbus (appointment to fill expired term of Mr. Folger)

Ex Officio members:

Alvin D. Jackson, M.D., *Director*, Ohio Department of Health

Christopher Korleski, *Director*, Ohio Environmental Protection Agency Ohio



Mark R. Shanahan, *Executive Director*

### **Ohio Air Quality Development Authority**

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