

PLANNING WITH  
**PASSION**



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AMP is a recognized leader in clean and sustainable generation.

On average, AMP members have approximately 21 percent renewables in their portfolio – not because it was mandated, but because it was part of a diverse power supply strategy.

We entered 2016 with a great deal of unpredictability as to the direction of regulation and we continue to prepare for further changes with the new administration. AMP and its members are committed to being responsible corporate citizens, government entities, employers and environmental stewards. We will continue to maintain a supply of cost-competitive, reliable electric power for our members and their customers.

This sustainability report has been designed as a companion to the other AMP and Efficiency Smart-prepared annual reports. The AMP Board of Trustees adopted Environmental Stewardship principles in 2005, with a re-adoption and expansion in 2011. Throughout this report we illustrate how we use these principles as a business approach that creates long-term member value by embracing opportunities and managing risks derived from economic, regulatory and societal developments.



Marc S. Gerken, PE  
AMP President/CEO



Steve Dupee  
AMP Board of Trustees Chair  
Village Manager of Wellington, Ohio (representing Oberlin)



Marc Gerken, PE (left)  
AMP President/CEO  
and Steve Dupee, AMP  
Board of Trustees Chair.

Providing a balanced and sustainable power supply portfolio



AMP is committed to providing our members with a variety of options for meeting their power supply needs. This includes maintaining a balanced portfolio of generation projects, power purchase agreements, and a project development pipeline that includes cost-effective fuel and generation technology options. This also means using energy efficiency and load control as meaningful tools in power supply planning to reduce the need for new generation resources.

AMP and its members own approximately 1,900 megawatts (MW) of generation and AMP members have diverse resource portfolios that include coal, natural gas, hydro, solar, wind, landfill gas, diesel and wholesale market purchases. AMP's renewable resources makes up approximately 21 percent of its energy needs. Visit the "Generation Assets" section of the AMP website for additional information.

A few of the many noteworthy items in regards to AMP's power supply portfolio in 2016 are highlighted below.

### HYDROPOWER

Hydropower has become a key component of AMP members' commitment to a responsible, diversified power supply portfolio. With the commercial operation of eight out of 11 hydropower turbines in 2016, AMP and its members marked a transition into cleaner and renewably sourced, carbon-free energy. These projects are long-term assets with a potential life of 80 to 100 years. They play a key role in creating balanced and diversified resource portfolios for participating members.



The dedication for the Meldahl Hydroelectric Plant was held in June, and a celebration for combined hydro projects Cannelton, Willow Island and Smithland took place in October at the Willow Island facility. The three remaining turbines at Smithland are scheduled to come online in 2017. Combined, these four facilities will add more than 300 MW of new hydropower, representing the largest deployment of new run-of-the-river hydro in the nation in recent years.

### SOLAR

AMP has a history of success in solar. The Napoleon Solar Facility has been a valuable generation asset for AMP since it came online in 2012. In spring 2016, AMP executed a solar power purchase agreement with DG AMP Solar LLC, a wholly owned subsidiary of NextEra Energy Resources LLC, for the development, construction and operation of up to 80 MW or more of new solar electric generation facilities. Construction began on a 20 MW site located in Bowling Green (the largest solar installation in Ohio)

in late July 2016 and went into commercial operation in January 2017. Solar installations in Marshallville and Prospect, Ohio, and Front Royal, Virginia also went into commercial operation in early 2017. Additional sites are under development in Ohio, Michigan and Delaware. These behind-the-meter solar projects provide not only peaking energy, but also capacity and transmission savings.

### PRAIRIE STATE

The Prairie State Generating Company (PSGC) was recognized for its environmental stewardship efforts with a Green Leaf Achievement award from HeartLands Conservancy in spring 2016. PSGC received the award in the business and industry category for its efforts to create a long-term sustainability plan for the power plant's coal combustion residuals (CCR). Utilizing these CCR materials provides environmental benefits through CO2 emission reduction and also economic benefits for the campus.

Reducing our overall emissions profile

2 PRINCIPLE



AMP is committed to reducing its overall emissions profile. Reductions of airborne emissions can be achieved through the use of efficient coal and natural gas and other lower- or zero-emission generation technologies (including hydroelectric and other renewables), supply-side or end-use efficiency improvements, and conservation activities. Improvements in energy and operational efficiency and use of efficient coal and natural gas technologies at the generation level will also reduce water usage and need for landfill space. Mindful that emissions of greenhouse gases (GHGs) will be limited at some point in the future, AMP will prudently invest in projects to offset carbon dioxide and other GHG emissions from our fossil generation resources. AMP also encourages efforts to account for and reduce GHG emissions by individual AMP member communities, which promotes balancing their system needs with other stewardship and customer values.

AMP continues to provide efficient and reliable power while also striving to reduce and mitigate for airborne emissions. Some highlights of AMP's efforts to reduce its overall emissions profile include:

### CARBON MITIGATION/ CARBON OFFSET PROJECTS

In the spring of 2016, approximately 257 acres of Ohio state forests were planted with more than 182,000 native hardwood tree seedlings as part of AMP's ongoing reforestation efforts on reclaimed strip mine land on behalf of member communities. The projects are located at Fernwood, Harrison and West Blue Rock state forests near Steubenville, Cadiz and Zanesville across eastern Ohio. These projects represent a second phase of reforestation, which first began in 2012 with the planting of 210 acres in Columbiana County at Hellbender Bluff State Forest. The reforestation efforts are the result of an ongoing partnership between AMP and the Ohio Department of Natural Resources (ODNR).

AMP continues to work with project partners to identify future project sites for additional carbon offset reforestation projects. In addition, AMP worked with S2C Pacific to analyze its carbon offset projects and recommend improvement strategies.

### ECOSMART CHOICE

The City of Hudson became the ninth member of AMP's EcoSmart Choice program in October 2016.

The EcoSmart Choice green pricing program enables AMP members to extend the benefits of renewable generation to their customers, regardless of the communities' power supply mix. The customers of participating AMP member communities can elect to offset all (100 percent) or a percentage (25, 50 or 75) of their monthly electric usage with renewable energy certificates (RECs). Customers pay a small premium per kilowatt hour (\$0.005) on their monthly bills to support the purchase of RECs equivalent to the percentage of electricity they choose to offset. Green pricing programs such as EcoSmart Choice help stimulate the demand for renewable energy projects within the region.

Participating AMP communities purchased more than 48,000 MWh of green power through the program in 2016, a nearly 15 percent increase over 2015's green power usage. The program offset 23,818 tons of CO2 emissions, 31.69 tons of SO2 emissions and 18.01 tons of NOx emissions in 2016.



## Using less

### 3 PRINCIPLE

AMP recognizes that electricity not generated – because it is not needed – yields the greatest environmental benefit and is essential to a truly sustainable business approach. Reducing electricity demand through innovative conservation efforts and efficiency improvements offered to AMP member communities will help conserve natural resources as well as reduce emissions. AMP will also promote the “reduce, reuse, recycle” principles of sustainability to its membership and employees and throughout its operations.

*AMP provides and facilitates many programs and services to its membership in an effort to use less. Major accomplishments in this area throughout the past year are described here.*

## EFFICIENCY SMART

AMP continues its success with the Vermont Energy Investment Corporation (VEIC) in providing a wide range of energy-efficiency and implementation services for subscribing AMP members through the Efficiency Smart program. The relationship with VEIC is in its seventh year. The goal of Efficiency Smart is to encourage residential, commercial and industrial customers to adopt cost-effective energy efficiency services that provide reliable and verifiable cost savings. In 2016, members conserved 189,950 MWh from the program, which avoided to 94,215 tons of CO<sub>2</sub>, 125.37 tons of SO<sub>2</sub> and 71.23 tons of NO<sub>x</sub> emissions.

For the 2014-2016 contract period, Efficiency Smart achieved 161 percent of its cumulative three-year performance target. Each participating community's individual energy-savings target eclipsed 100 percent by the end of the contract period.

The first three-year contract, which ran from 2011 to 2013, cumulatively saved approximately 122,000 MWh of energy (or 151 percent of the program's three-year target) of participating member utilities' needs by the end of the contract.

AMP and VEIC executed a third contract in January 2017 that extends the operation of Efficiency Smart beyond its initial six-year term. The new Efficiency Smart product menu features four performance-based service options and numerous a la carte service options at various price points. Members are able to choose a contract for performance-based and a la carte services at any time due to the program's rolling subscription feature. All energy savings for the performance-based products are independently verified and guaranteed. Municipalities taking a performance-based service will be refunded for any guaranteed savings not delivered.

This more flexible version of the Efficiency Smart program offers products and services at different price points to serve members of all sizes and levels of efficiency needs.

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PRINCIPLE



AMP is faced with finding new power supply options to meet member needs. Volatile energy markets and aging generation resources have spurred AMP to make smart investments in efficient coal, natural gas, hydroelectric, landfill gas and solar generation assets to mitigate overexposure to the wholesale market. AMP will continue to pursue incorporating other cost-effective renewable resources as an important part of our generation portfolio and will endeavor to use any available favorable local, state or federal regulatory treatment when siting and financing these projects.

AMP and its projects continued to be recognized for their financial strength by rating agencies in 2016. Smart investments for the year included:

**MELDAHL/GREENUP**

AMP sold par bonds totaling \$125,630,000 to purchase a 48.6 percent share of the Greenup hydroelectric generating facility on the Ohio River from the City of Hamilton in May. The Greenup Hydroelectric Project financing received ratings in April: A1 from Moody's Investors Service, A from Standard and Poor's and A- from Fitch Ratings. The bonds closed in May. In September, S&P Global Ratings assigned its A rating to AMP's combined hydroelectric project revenue bonds.

AMP sold par bonds totaling \$80,050,000 in July to finance amounts for the Meldahl project. The bonds were rated in the A category by all three rating agencies and the final sale resulted in an all-in rate of 3.37 percent – a nearly historic low, according to Bank of America Merrill Lynch.

**WIND**

The AMP Wind Farm, Ohio Municipal Electric Generation Agency Joint Venture 6 (OMEGA JV6), is now in its second decade of operation. The final payment on the original project financing was made in 2015, four years ahead of schedule, and 2016 was the first full year the 10 participating communities have complete ownership with no debt. This makes the energy production from the wind farm one of the lowest cost resources in participating members' portfolios.

Green Bond Financed Hydro Projects 2016 Report	Meldahl	Combined Hydro (Cannelton, Willow Island and Smithland)
Net Renewable Capacity (MW)	89.2	108.3
Net Annual Renewable Generation (MWh)	366,655	561,444
Capacity Factor (%)	46.80%	59.00%
<b>Emissions Avoidance [1] [2]</b>		
Annual CO2 (GHG) emissions avoided (Tons)	181,861	278,476
SO2 emissions avoided (Tons)	241.99	370.55
NOx emissions avoided (Tons)	137.50	210.54

\*Smithland Hydro is scheduled to come online in 2017.

[1] PJM 2012-2016 CO2, SO2 and NOx Emissions Rates Report March 17, 2017

[2] PJM State of the Market Report, 2016 Table 3-6



AMP member municipal electric systems are critical components in the success of the communities they serve. Investment of capital – both financial and human – in AMP member communities is essential to ensuring a good quality of life and encouraging economic development and growth. AMP provides ongoing employee training, safety instruction, project engineering, and other technical services to ensure that member communities have access to the most up-to-date services in these areas. Environmental enhancements (planting trees, creating green space, etc.) are also valuable assets to local communities, and AMP will provide technical support and work with interested member communities to identify energy efficiency, carbon management, and sustainable investment and development opportunities consistent with local needs.

*AMP provides many diverse member training programs and compliance services. More detailed information on how AMP is assisting its member communities can be found in the separate AMP Annual Report with a few featured items from 2016 below:*

### FOCUS FORWARD

AMP established the “Focus Forward” initiative at the direction of the AMP Board as a response to a changing and evolving industry. The initiative included the creation of the Focus Forward Advisory Council in spring 2016. The council represents a cross section of municipal officials from 12 systems in three states, rate consultants and attorneys. Through the Focus Forward Initiative, AMP also developed an extensive toolkit for members that features a rate design guide, interconnection checklist and member case studies for customer distributed energy resources, such as rooftop solar.



### ADVANCED METERING INFRASTRUCTURE

Many AMP members are considering advanced metering infrastructure (AMI) deployments as an alternative to their existing manual, hand-held or drive-by metering system. With the help of the AMP Board and pilot members, AMP took its AMI program from concept to operation this year. Ephrata, Pennsylvania, became the first member to subscribe in the fall of 2016.

The AMI program provides an alternative for members considering deploying the technology. AMP researched the AMI marketplace by reviewing responses from over 20 vendors and selected top-tier providers to give members access to technology and capabilities that can provide the foundations for a smart city.

The program allows for lower cost acquisition of electric, water and gas meters and communications equipment

through purchasing aggregation, sharing of key resources necessary to deploy meters and systems operation. The IT infrastructure is also provided using a shared services operating model.

### E-RELIABILITY TRACKER

Through the American Public Power Association (APPA) membership, AMP began offering eReliability Tracker service to all AMP members at no cost in late 2015. There are 35 members who now participate in the program, receiving customized annual reports that analyze the utility’s outage information for the previous year and compare the data to other subscribers’ data in the same region and class size. Subscribers to the service can also earn a certificate of excellence, as well as points toward APPA Reliable Public Power Provider (RP3) designation through active participation in the service.





## Reaching out to stakeholders

### 6 PRINCIPLE

AMP will reach out to other stakeholder entities – including (but not limited to) government, business, academia, media and other utility organizations – to ensure that they understand AMP’s mission and vision and AMP’s approach to sustainability. This outreach is intended to help AMP identify potential future collaborative opportunities beyond those traditionally associated with providing electric power supply. AMP encourages member communities to identify potential partnership opportunities as well.

*AMP continued to foster existing and develop new relationships with stakeholders. Several examples of how this was accomplished in 2016 are highlighted below:*

### REGULATORY

AMP and the Ohio Municipal Electric Association (OMEA) have been active participants in helping to shape energy policy. AMP/OMEA filed comments with the U.S. Environmental Protection Agency (USEPA) in 2016 on the Clean Power Plan, Cross-State Air Pollution Rule update, the proposed Clean Energy Incentive Program, the proposed revisions to the Prevention of Significant Deterioration (PSD) and Title V greenhouse gas (GHG) permitting regulations and establishment of a significant emissions rate for GHG emissions under the PSD program. AMP’s official comments are available on the “Regulatory and Legislative Comments” section of the AMP website.

Under the new Trump Administration, the industry has seen a de-emphasis on CO2 and GHG reduction, and AMP will continue to be involved in the legislative process to promote the best interests of municipal electric systems.

In 2016, AMP staff made strides to increase advocacy at the federal level to improve transmission cost control, risk management, and support sustainability priorities for members. Throughout the year, AMP engaged in transmission rate cases at FERC, in RTO forums and legislative forums to advance member interests. AMP has actively participated in FERC proceedings and met with FERC commissioners and key staff to express concerns over rising costs, share strategy and secure their support. On a related matter, AMP continues to advocate for regulatory environments and market structures that permit less dependence on transmission and support sustainability. This includes development of resources behind the meter, energy efficiency, demand response, energy storage and distributed energy resources.



### 2016 AMP / OMEA ANNUAL CONFERENCE

More than 400 representatives from member communities, AMP staff and municipal electric partners attended the 2016 AMP/OMEA Conference held in Columbus Sept. 26-29. Featured speakers included Sue Kelly, president/CEO of the American Public Power Association (APPA) and Mike Zenker, senior director of NextEra Energy Resources. In addition, a panel was held focused on the emerging trends associated with cost declines observed in the solar and energy storage industry. Julia Hamm, president/CEO of the Smart Electric Power Alliance (SEPA) spoke about the continued price declines across the solar sector including utility, commercial and residential installed cost per watt pricing.

Leading by example

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PRINCIPLE

AMP encourages its officers and employees to lead by example through increased efforts to reuse and recycle home and office products and conserve energy, both at home and in the workplace. To the extent practicable, AMP will strive to use its headquarters building to demonstrate the use of green materials and energy efficient products, thus leading by example. AMP reports its sustainability and environmental stewardship actions on both a quarterly and an annual basis and, where possible, measures its success in achieving the goals laid out by these sustainability principles.



*Striving to be public power's leader in wholesale energy supply and value-added member services, as declared in the AMP vision statement, carries with it the responsibility to help set the standard for sustainability as well. Key efforts of AMP-specific sustainability for the year include:*

### CORPORATE SAFETY

AMP experienced two recordable accidents in 2016, one of which was also a lost work day case. Although minor in nature, certain circumstances led to the injury being classified as "lost time" in accordance with federal regulations. AMP had an average of 207 employees in 2016 with a total of 317,194 man hours worked and an incident rate of 1.2 for the year.\* In addition, AMP provided new hire safety training for 40 new employees.

\*Incident rate is the number of recordable injuries per 100 full-time employees and is calculated as: the number of recordable injuries x 200,000 average hours worked by 100 fulltime employees in a year / man hours worked for the year.

### AMP HQ CORPORATE SUSTAINABILITY INITIATIVES

AMP staff and its corporate responsibility engagement team continued to make progress on a number of internal sustainability initiatives across the organization in 2016. This included working with a third-party engineer to develop a turnkey scope of work to replace the building's chilled water and control systems, and replacing lights in the headquarters parking lot with efficient LED technology.

AMP members and staff had an opportunity to learn more about electric vehicles and charging infrastructure at the annual AMP Technical Services Conference in April during a presentation from Ohio EV Solutions and Clean Fuels Ohio. AMP is in the process of installing an EV charging station at its headquarters.

### STAFF GIVING/CHARITABLE

AMP defines "corporate sustainability" as a business approach that creates long-term member value by maximizing opportunities and minimizing risks related to a host of economic, environmental and community or societal considerations. Staff and friends at AMP headquarters helped save lives through the second annual AMP blood drive to benefit the American Red Cross in May. The blood drive is one way AMP meets these expectations for the community.

During the 2016 holiday season, AMP staff donated more than 300 pounds of canned goods, toiletries, clothing and other items to the Mid-Ohio Foodbank and Community Shelter Board. In addition, AMP staff donated a total of \$18,396 in 2016 to local charities through payroll deduction.

## AWARDS TO MEMBER COMMUNITIES

In the **generation category**, safety awards were presented to:

- Bryan Municipal Utilities
- Dover Light & Power
- Orrville Utilities Power Plant Operations and Power Plant Maintenance departments
- Shelby Division of Electric and Telecommunications

In the **transmission/distribution category**, safety awards were presented to:

- Bryan Municipal Utilities
- Cuyahoga Falls Electric System
- Hudson Public Power
- Village of Minster Electric Department
- Montpelier Municipal Utilities
- Orrville Utilities
- St. Clairsville Light & Power
- Shelby Division of Electric and Telecommunications
- City of Wadsworth Electric and Communications
- Wapakoneta Electric Department

**Safety Commendations** were given to:

- Hamilton Department of Electric for generation.
- City of Westerville Electric Division for transmission and distribution.

**Mutual Aid Commendations** were given to:

- Ellwood City Power and Light for providing assistance to the Borough of Zelenople.
- Piqua Power System for providing assistance to Dayton Power & Light.
- Westerville Electric Division for providing assistance to the Village of Prospect.
- Bowling Green Municipal Utilities for providing assistance the City of Oberlin.

**Finance Awards**

- Highest Credit Score Population more than 5,000 – tie between Lebanon and Oberlin, both with a score of 97 percent.
- Highest Credit score population less than 5,000 – Clinton with a score of 95 percent.
- Most improved credit score – Cuyahoga Falls with a 31 percent improvement.
- Financing of the Year – Dover for the emissions control system upgrades at the power plant; and Holiday City for the installation of the Selwyn Drive Substation.

**Innovation Awards**

- Cuyahoga Falls Electric System for the new Feeder Automation System.
- Hudson Public Power for the Solar Regional Training Facility.
- Minster Electric Department for the Solar and Energy Storage Facility.

**Public Power Promotion Awards**

- City of Columbus Division of Power Street Lighting Program video.
- Honorable Mention: Hamilton Utilities for its website update.

**Systems Improvement Awards**

- Bryan Municipal Utilities for the East Village Primary and Secondary Upgrade Phase A project.
- Cuyahoga Falls Electric System for the Portage Crossing Area Conversion project.
- Honorable Mention: Dover Light & Power for the Ash Conveying System at the Generating Station.
- Honorable Mention: St. Clairsville Light and Power Underground Primary Upgrades project.
- Honorable Mention: City of Wadsworth Electric and Communications Department for the Substation Security Systems project.

**Systems Improvement Awards**

- City of Columbiana Electric Department LED Streetlight Upgrade project.
- Cuyahoga Falls Electric System for the 2016 Arbor Day Community Celebration.
- Hamilton Utilities for the LED Streetlight Conversion project.

**AMP Hard Hat Safety Awards**

Member utilities with 2016 Hard Hat Award winners were:

- City of Columbus Division of Power
- Cuyahoga Falls Electric System
- Dover Light & Power
- Borough of Ephrata Electric Division
- City of Hamilton Greenup Hydroelectric Plant
- Hudson Public Power
- Minster Electric Department
- Montpelier Municipal Utility
- Orrville Utilities
- St. Clairsville Light and Power
- City of Wadsworth Electric Division

The four AMP members below received Reliable Public Power Provider (RP3) designation from the American Public Power Association (APPA) in 2016. They joined the nine AMP members who received the recognition in 2015, and the 14 AMP and DEMEC members who were recognized in 2014.

PLATINUM  
Newton Falls  
Bryan

GOLD  
Wadsworth  
Berlin (MD)

# AMP'S ANNUAL SUSTAINABILITY PERFORMANCE 2013-2016

	2013	2014	2015	2016
<b>AMP Organization and Financial Metrics</b>				
Number of member communities	129	130	131	135
Load (in million MWh)	16.4	16.5	16.5	16.7
System peak (in MW)	3,404	3,346	3,378	3,416
Electric revenue (in \$)	\$953,077,162	\$1,012,684,268	\$1,103,886,270	\$1,218,475,675
Service fees (in \$)	\$9,648,054	\$10,913,504	\$11,515,575	\$11,501,983
Programs and other revenue (in \$)	\$19,769,641	\$16,305,240	\$12,589,167	\$12,513,647
Operating expenses (in \$)	\$879,798,629	\$937,845,012	\$1,002,832,762	\$1,028,599,138
Net margin (in \$)	\$5,278,799	\$2,577,656	\$5,823,840	\$10,247,552
Number of employees (as of 12/31)	147	178	180	156
<b>Power Generation (in net MWh)</b>				
Prairie State Energy Campus (AMP share)	2,076,643	2,641,857	2,592,694	2,470,185
AFEC	2,708,704	2,351,669	3,649,554	2,683,735
Belleville Hydro	284,731	303,340	258,668	273,205
Distributed Generation	8,183	6,561	9,498	19,615
AMP Wind Farm	14,582	14,262	13,086	10,892
Napoleon Solar	5,270	5,147	5,111	4,888
Greenup Hydro*	0	0	0	235,313
Meldahl Hydro	0	0	0	366,655
Cannelton Hydro	0	0	0	343,202
Willow Island Hydro	0	0	0	218,242
Landfill Gas	328,684	309,338	308,441	313,638
Blue Creek Wind	139,573	135,645	138,109	136,861
Smithland Hydro	0	0	0	0
<b>Total</b>	<b>5,567,000</b>	<b>5,767,819</b>	<b>6,975,161</b>	<b>7,076,431</b>
<b>Efficiency and Other Offsets to Traditional Generation</b>				
Efficiency Smart - cumulative generation savings since 2011 (in MWh)	121,339	143,133	179,018	189,950
% of 2011-2013 targets	150.1%	-	-	-
% of 2014-2016 targets**	-	48%	97%	161%
EcoSmart Choice (green energy sales in MWh)	5,642	9,645	41,871	48,021
<b>Health &amp; Safety</b>				
Employee work-related fatalities	0	0	0	0
Reportable incidents or accidents	0	0	1	2
Lost work-day incidents	0	0	1	1

	2013	2014	2015	2016
<b>Environment</b>				
Permit violations	1	0	0	0
Fines or penalties	0	0	0	0
NPDES permit exceedances	0	0	0	1
CO2 emissions (in short tons)	3,231,142	3,276,805	3,967,732	3,798,210
Annual CO2 emission rate (in lbs/MWh)	1,379	1,403	1,269	1,073
SO2 emissions (in short tons)	1,159	1,390	1,824	2,010
Annual SO2 emission rate (in lbs/MWh)	0.495	0.595	0.584	0.568
NOx emissions (in short tons)	699	775	894	1033
Annual NOx emissions rate (in lbs/MWh)	0.298	0.332	0.286	0.292
PM emissions (in short tons)	64	63	79	122
Annual PM emission rate (in lbs/MWh)	0.027	0.027	0.025	0.03
CO emissions (in short tons)	560	540	352	146
Annual CO emission rate (in lbs/MWh)	0.239	0.231	0.113	0.041
VOC emissions (in short tons)	32	42	14	29
Annual VOC emission rate (in lbs/MWh)	0.014	0.014	0.004	0.008
Cooling water usage AFEC (net, in million gallons)	358	453	467	540
Cooling water usage AMP share of PSEC (in million gallons)	-	-	1,308	1,105
AMP HQ recycled paper and cardboard (estimate, in pounds)	-	21,000	19,200	10,410
AMP HQ recycled glass, metal and plastic (estimate, in pounds)	-	1,040	2,255	469
Forestry carbon projects - cumulative acres of trees planted	210	210	210	467
<b>Community</b>				
Number of scholarships awarded	8	8	8	8
Value of scholarships awarded	\$16,000	\$16,000	\$16,000	\$16,000
AMP employee charitable giving (payroll deduction in \$)	\$8,880	\$10,856	\$14,213	\$18,396

\* Figure includes total output. AMP acquired 48.6 percent ownership of the facility in 2016.

\*\* Hamilton's contract period runs 2/1/2015 through 1/31/2018. Hamilton's savings were 2,095 MWh in 2015 and 6,563 MWh in 2016, 24 percent to goal and 97 percent to goal respectively. Cleveland Public Power's contract continued into June 2014. CPP achieved 2,935 MWh and 126 percent of its total goal in 2014.

## AMP'S RENEWABLE ENERGY PRODUCTION: EMISSIONS AVOIDANCE

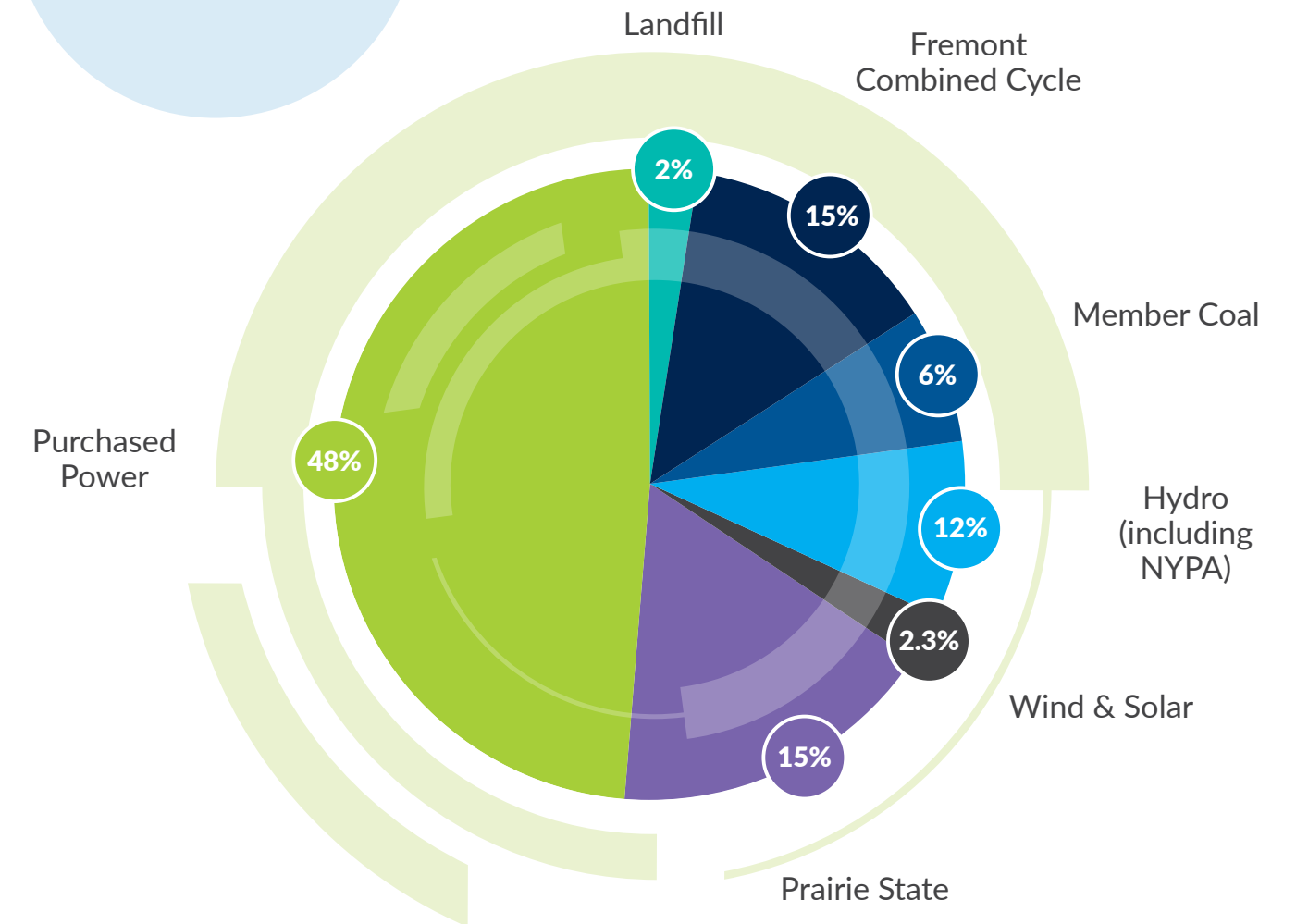
	2016 MWh	CO2 emissions avoided (Tons)*	SO2 emissions avoided (Tons)*	NOx emissions avoided (Tons)*	Total emissions avoided (Tons)
Belleville Hydro (JV5)	273,205	135,510	180.32	102.45	135,792
Greenup Hydro	235,313	116,715	155.31	88.24	116,959
Meldahl Hydro	366,655	181,861	241.99	137.50	182,240
Cannelton Hydro	343,202	170,228	226.51	128.70	170,583
Willow Island Hydro	218,242	108,248	144.04	81.84	108,474
AMP Wind Farm (JV6)	10,892	5402	7.19	4.08	5414
Napoleon Solar	4,888	2424	3.23	1.83	2430
Landfill Gas	313,638	155,564	207.00	117.61	155,889
Blue Creek Wind	136,861	67,883	90.33	51.32	68,025
EcoSmart Choice	48,021	23,818	31.69	18.01	23,868
Efficiency Smart	189,950	94,215	125.37	71.23	94,412
Carbon Offset** Forestation Projects	467 acres	487**			487
					<b>1,064,573</b>

*PJM Market Power Emissions Rate	2016
CO2 emissions Factor (lbs/MWh)	992
SO2 emissions Factor (lbs/MWh)	1.32
NOx emissions Factor (lbs/MWh)	0.75

[\\*http://www.pjm.com/~media/library/reports-notice/special-reports/20170317-2016-emissions-report.ashx](http://www.pjm.com/~media/library/reports-notice/special-reports/20170317-2016-emissions-report.ashx)

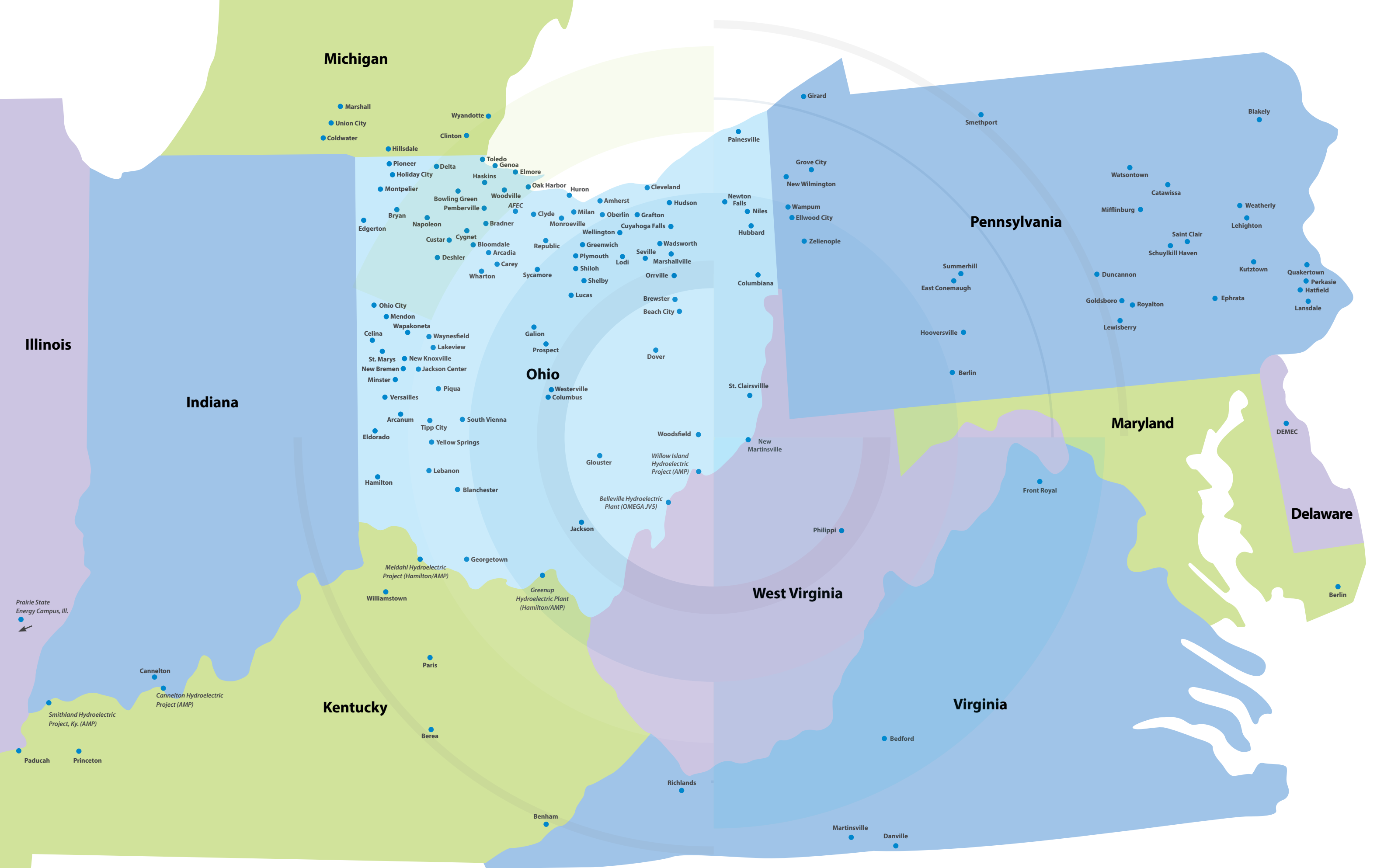
\*\*USEPA estimates 1.043 tons of CO2 is sequestered annually by one acre of average US forest.

2016 AMP  
MEMBER ENERGY  
RESOURCE MIX  
(16,750,000 MWh)



**Note:**

- Member coal Includes Paducah and Princeton's Prairie State through KMPA
- Wind & Solar Includes Member Owned Solar
- Hydro Includes Member Owned Hydro



Illinois

Michigan

Indiana

Ohio

Pennsylvania

Maryland

Delaware

West Virginia

Virginia

Kentucky

Prairie State Energy Campus, Ill.

Smithland Hydroelectric Project, Ky. (AMP)

Cannelton Hydroelectric Project (AMP)

Meldahl Hydroelectric Project (Hamilton/AMP)

Greenup Hydroelectric Plant (Hamilton/AMP)

Belleville Hydroelectric Plant (OMEGA JVS)

Willow Island Hydroelectric Project (AMP)



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