

10:00 a.m. (EST)

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Energy Committee

November 19, 2015

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**2016 Energy Committee
Calendar**
Meetings will begin at 10:00am

Thursday, February 25, 2016
Thursday, May 26, 2016
Thursday, August 25, 2016
Thursday, November 17, 2016

OMA Energy Committee Meeting Sponsor:





OMA Energy Committee Agenda November 19, 2015

Welcome and Introductions

Brad Belden, Belden Brick, Chair

State Public Policy Report

Ryan Augsburger, OMA Staff

Customer-Sited Resources Report

- Energy Efficiency Program Updates
- EE Peer Network Activity
- Energy Efficiency Standards
- Implications for Clean Power Plan

John Seryak, PE, RunnerStone, LLC

Counsel's Report

- Utility power purchase agreements (PPAs)
- FES pass through charges
- AEP transmission charges

Kim Bojko, Carpenter Lipps & Leland
Ryan O'Rouke, Carpenter Lipps & Leland

Special Presentation

Jason Rafeld, PUCO Chief of Staff

Panel Presentation

- A panel discussion on the consequences of pending utility power purchase agreements (PPAs) and rumored "re-regulation"

Kevin Wade, Honda North America
Andrew Thomas, Cleveland State University
Iryna Lendel, Cleveland State University
Mitch Given, America's Natural Gas Alliance
Brad Couch, Ariel Corp (PHONE)

Lunch

Presentations / Updates / New Business

- Electricity Market Trends
- Natural Gas Market Trends

Susanne Buckley, Scioto Energy

Richard Ricks, NiSource, Columbia Gas of Ohio

Meeting sponsored by:



To: OMA Energy Committee
From: Ryan Augsburger
Re: Energy Public Policy Report
Date: November 19, 2015

Overview

The General Assembly returned to the statehouse in September and is wrapping up priority items before the holiday recess. Energy matters most discussed among policymakers include ongoing PUCO rate cases governing electricity and the General Assembly's report on alternative energy standards, presently frozen in Ohio. 2016 is a presidential election year. We expect most legislative activity to occur by June.

Electricity Rates and Regulation

Significant utility rate cases are pending at PUCO. Distribution utilities have filed cases proposing power purchase agreements (PPAs). The cases are highly controversial and have been reported in the press. See OMA Energy Group testimony included.

Pressure is building on regulators to approve the utility power purchase agreement proposals. In contrast competitive supplier Dynegy has promised to appeal a rumored "settlement with PUCO" to the Supreme Court further contributing to uncertain future rate structures.

FirstEnergy is attempting to obtain massive subsidies from customers for two of its largest power plants for 15 years in a case pending before the Public Utilities Commission of Ohio (PUCO). The OMA Energy Group has intervened in the case to oppose the FirstEnergy subsidies. It seems likely now that, if it fails at the PUCO, the company might seek a form of a bailout from the General Assembly.

kWh Tax Revisions?

Stalled legislative proposals to modify the tax revenue generated by power plants (via the tangible personal property tax) may be creeping into discussions to modify the kilowatt hour tax which is paid by customers. In contrast, the tangible personal property tax is paid by power plants.

Clean Power Plan / Federal Greenhouse Gas Regulations / 111(d)

US EPA issued a final rule in early August. The OMA filed comment together with the NAM and individually. Ohio EPA and the PUCO filed comment on behalf of the state as did the Ohio attorney general. The gist of the testimony: as proposed, 111(d) revisions are unworkable. Litigation on the rule is expected to delay effectiveness. If the provision goes into effect, states will need to adopt "state implementation plans" that will impose regulations on emissions to attain the federal goals. Ohio regulators intend to seek extension. The OMA is conducting research on the many ramifications of the CPP.

Natural Gas Infrastructure

The OMA has expressed public support for the Rover Pipeline and Nexus Pipeline. Billions of dollars of pipeline investment are underway by several different developers. Additionally the OMA has participated in discussions with JobsOhio and representatives of America Natural Gas Alliance to consider measures to spur industrial delivery off new transmission investments. Research recently conducted by Cleveland State University may be helpful in this vein. Natural gas production continues to grow in the Buckeye state even with depressed pricing.

Transmission Charge Increase

Ratepayers within the AEP-Ohio service territory may have noticed a jump in on their electricity bills this summer. The increase is attributed to a new rider called the Basic Transmission Cost Rider (BTCR) that went into effect on June 1, 2015.

While lawyers for the OMA Energy Group contested the new rider, it was ultimately approved by the PUCO. Since the implementation of the new rider in June, some members (specifically, AEP-Ohio GS-2 and GS-3 customers) have seen a significant increase in their transmission costs. The OMA Energy Group is considering future action steps for concerned manufacturers.

Energy Efficiency Legislation

Legislation was enacted last year (SB 310) to revise Ohio's energy standards. The issue has been reported and discussed at OMA meetings for over two years.

SB 310 froze the alternative energy standards for two years and created a legislative study committee to assess the impacts of the standards. The study committee held their last meeting in July and will now fashion a report. The committee is co-chaired by Senator Troy Balderson and Representative Kristina Roegner. A report was issued in September and is enclosed. Also find enclosed an OMA analysis of the recommendations for manufacturers.

Manufactured Gas Plant Remediation Costs

No legislative activity evident. The OMA intervened in Duke Energy's gas distribution case before the PUCO case and is appealing the unfavorable decision. The Ohio Supreme Court is expected to rule on the merits late 2015 / early 2016.

Polar Vortex Pass-Through Charges

Generation customers of First Energy Solutions (FES) were notified by the provider that they would be billed for a regulatory event associated with the polar vortex power shortages in January 2014. The one-time charge is outside the terms of the contract. If allowed by regulators, the charges would result in an unfavorable precedent for all customers. Several OMA members are working collectively to contest the charges. See counsel's report.

*The Ohio House
of Representatives*



The Ohio Senate

The Energy Mandates Study Committee

Co-Chairs' Report

**State Representative Kristina Roegner, Co-Chair
State Senator Troy Balderson, Co-Chair**

September 30, 2015

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I. INTRODUCTION

The Energy Mandates Study Committee (the “Study Committee”) was created by Substitute Senate Bill No. 310 of the 130th General Assembly (“SB310”). The Study Committee consisted of a bipartisan panel of members of both the Ohio House and Senate and the chairperson of the Public Utilities Commission of Ohio (“PUCO”). SB310 tasked the Study Committee with studying Ohio’s renewable energy, energy efficiency, and peak demand reduction mandates (collectively, the “Mandates”) enacted into law by Amended Substitute Senate Bill No. 221 of the 127th General Assembly (“SB221”).

By September 30, 2015, SB310 requires the Study Committee to submit a report of its findings to the House and Senate that includes, at a minimum, the following:

1. A cost-benefit analysis of the renewable energy, energy efficiency, and peak demand reduction mandates, including the projected costs on electric customers if the mandates were to remain at the percentage levels required under sections 4928.64 and 4928.66 of the Revised Code, as amended by this act;
2. A recommendation of the best, evidence-based standard for reviewing the mandates in the future, including an examination of readily available technology to attain such a standard;
3. The potential benefits of an opt-in system for the mandates, in contrast to an opt-out system for the mandates, and a recommendation as to whether an opt-in system should apply to all electric customers, whether an opt-out system should apply to only certain customers, or whether a hybrid of these two systems is recommended;
4. A recommendation on whether costs incurred by an electric distribution utility or an electric services company pursuant to any contract, which may be entered into by the utility or company on or after the effective date of SB310 for the purpose of procuring renewable energy resources or renewable energy credits and complying with the requirements of section 4928.64 of the Revised Code, may be passed through to any consumer, if such costs could have been avoided with the inclusion of a change of law provision in the contract;
5. A review of the risk of increased grid congestion due to the anticipated retirement of coal-fired generation capacity and other factors; the ability of distributed generation, including combined heat and power and waste energy recovery, to reduce electric grid congestion; and the potential benefit to all energy consumers resulting from reduced grid congestion;

6. An analysis of whether there are alternatives for the development of advanced energy resources as that term is defined in section 4928.01 of the Revised Code;
7. An assessment of the environmental impact of the renewable energy, energy efficiency, and peak demand reduction mandates on reductions of greenhouse gas and fossil fuel emissions; and
8. A review of payments made by electric distribution utilities to third-party administrators to promote energy efficiency and peak demand reduction programs under the terms of the utilities' portfolio plans. The review shall include, but shall not be limited to, a complete analysis of all fixed and variable payments made to those administrators since the effective date of SB221, jobs created, retained, and impacted, whether those payments outweigh the benefits to ratepayers, and whether those payments should no longer be recovered from ratepayers. The review also shall include a recommendation regarding whether the administrators should submit periodic reports to the Commission documenting the payments received from utilities.

The Senate President and the Speaker of the House appointed the following members to the Study Committee:

Senator Troy Balderson, <i>co-chair</i>	Representative Kristina Roegner, <i>co-chair</i> ¹
Senator Cliff Hite	Representative Ron Amstutz
Senator Bob Peterson	Representative Louis W. Blessing, III
Senator Bill Seitz	Representative Christina Hagan
Senator Capri Cafaro	Representative Jack Cera
Senator Sandra Williams ²	Representative Mike Stinziano

Andre T. Porter, in his capacity as the chairman of the PUCO, also served as an ex officio, nonvoting member of the Study Committee.³

From November 2014 through July 2015, the Study Committee conducted eight public hearings. All testimony from those hearings, and testimony separately submitted to the Study Committee, can be found on the Study Committee's webpage at:

<http://esmc.legislature.ohio.gov/testimony>

¹ Replaced former co-chair, Representative Peter Stautberg, after his term of office ended on December 31, 2014.

² Replaced former Senator Shirley Smith after her term of office ended on December 31, 2014.

³ Replaced former Chairman of the PUCO, Thomas W. Johnson, who served on the Study Committee from November 2014 through April 2015.

II. FINDINGS OF THE STUDY COMMITTEE

Historical Costs of Mandates

Renewables

Ohio's electric distribution utilities ("EDUs") and competitive retail electric suppliers ("CRES providers") are required to comply with Ohio's renewable mandate⁴ by purchasing renewable energy credits ("RECs").⁵ Ohio's renewable mandate is bypassable, which means customers pay for the mandate by paying their electric provider.⁶ While EDUs specifically bill customers the exact cost of the mandate, CRES providers simply account for all of their costs (including the mandate) in their price offerings.⁷ This is because CRES providers' rates are not set or approved by the PUCO.⁸

The most recent data the PUCO provided to the Study Committee on the cost of RECs in Ohio is from 2012,⁹ which illustrates that in-state RECs were more expensive than out-of-state RECs.

2012 Average Cost of RECs¹⁰

	Ohio Electric Distribution Utilities	Ohio Competitive Retail Electric Service Providers
Category	Avg. \$/REC	Avg. \$/REC
Ohio Solar	\$212.23	\$195.93
Other Solar	\$58.75	\$104.99
Ohio Non-Solar	\$33.51	\$13.08
Other Non-Solar	\$24.93	\$2.04

As of December 2014, the PUCO determined the average monthly charge for the renewables mandate as \$0.001142 per kilowatt hour,¹¹ which averaged out to the following monthly costs for each customer class:¹²

⁴ By 2026 and each year thereafter, EDUs and CRES providers must obtain at least 12.5% of its energy supply from renewables.

⁵ Thomas W. Johnson, PUCO Chairman, p. 3, Dec. 8, 2014.

⁶ Thomas W. Johnson, PUCO Chairman, p. 3, Dec. 8, 2014.

⁷ Thomas W. Johnson, PUCO Chairman, p. 3-4, Dec. 8, 2014.

⁸ Thomas W. Johnson, PUCO Chairman, p. 3-4, Dec. 8, 2014.

⁹ See DRAFT Alternative Energy Portfolio Standard Report by the Staff of the Public Utilities PUCO of Ohio for the 2012 Compliance Year, Issued January 14, 2014 pursuant to R.C. 4928.64(D)(1) (PUCO Case No. 13-1909-EL-ACP). Pursuant to R.C. 4928.64(D), the PUCO is required to submit an annual report to the General Assembly that sets forth whether EDUs complied with the renewables mandate, in addition to the average cost of RECs for the reporting year. The PUCO has not finalized the 2012 report that was due to the General Assembly in 2013. (see PUCO Case No. 13-1909-EL-ACP). The PUCO has not drafted the 2013 report that was due to the General Assembly in 2014, but a case has been opened (see PUCO Case No. 14-2328-EL-ACP). The PUCO has not drafted the 2014 report that was due to the General Assembly in 2015, nor has a case number been opened for that report.

¹⁰ Thomas W. Johnson, PUCO Chairman, Exhibit A, Dec. 8, 2014.

Typical Bill Cost for Alternative Energy Rider (as of December 4, 2014)

Customer Class	AEP		Dayton Power & Light	Duke Energy	FirstEnergy		
	Columbus Southern Power	Ohio Power	DPL	Duke-Ohio	Cleveland Electric Illuminating	Ohio Edison	Toledo Edison
Average Residential	\$1.31	\$0.77	\$0.62	\$0.27	\$1.30	\$1.01	\$0.77
Average Commercial	\$506.52	\$298.65	\$248.04	\$109.20	\$501.60	\$388.20	\$297.30
Average Industrial	\$9,928.80	\$5,854.20	\$4,960.80	\$2,184.00	\$9,738.00	\$7,536.00	\$5,778.00

Note: Average Residential typical usage 750 kWh
 Average Commercial typical usage 300,000 kWh
 Average Industrial typical usage 6,000,000 kWh

The table above shows that in 2014 the average residential customer incurred a monthly charge between \$0.27 and \$1.31 for the renewables mandate. Multiplying these numbers by 12 months in a year, the average residential customer would have paid between \$3.24 and \$15.72 for the renewables mandate in 2014.

The actual costs paid by a customer for the renewables mandate in any given month is required to be placed on each customer's bill.¹³

Energy Efficiency/Peak Demand Reduction

Unlike the renewables mandate, Ohio's energy efficiency and peak demand reduction mandates apply only to EDUs.¹⁴ The costs associated with complying with the energy efficiency and peak demand reduction mandates are recovered by an EDU through a non-bypassable rider.¹⁵ That rider is recovered from all customers of an EDU regardless of whether they shop for electric generation with the exception of those mercantile customers that obtained a rider exemption from the PUCO pursuant to SB221.¹⁶

As of December 2014, the PUCO determined the average monthly charge for the energy efficiency and peak demand reduction mandates as \$0.007225 per kilowatt hour.¹⁷ The PUCO only provided the range of the costs of the energy efficiency and peak demand reduction

¹¹ Thomas W. Johnson, PUCO Chairman, p. 3, Dec. 8, 2014.

¹² Thomas W. Johnson, PUCO Chairman, Exhibit B, Dec. 8, 2014.

¹³ SB310 required the PUCO to adopt rules that require the costs of each mandate to be placed on each customer's bill. As of the date of publication of this Report, that rule has not yet been implemented.

¹⁴ Thomas W. Johnson, PUCO Chairman, p. 4, Dec. 8, 2014.

¹⁵ Thomas W. Johnson, PUCO Chairman, p. 4, Dec. 8, 2014.

¹⁶ Thomas W. Johnson, PUCO Chairman, p. 4, Dec. 8, 2014.

¹⁷ Thomas W. Johnson, PUCO Chairman, p. 3, Dec. 8, 2014.

mandates for residential customers, which ranged from \$0.00189 to \$0.004566 per kilowatt hour.¹⁸ The PUCO determined the average monthly costs of the energy efficiency and peak demand reduction mandates for the following customer classes to be:¹⁹

Typical Bill Cost for Energy Efficiency and Peak Demand Rider (as of December 4, 2014)

	AEP		Dayton Power & Light	Duke Energy	FirstEnergy		
Customer Class	Columbus Southern Power	Ohio Power	DPL	Duke-Ohio	Cleveland Electric Illuminating	Ohio Edison	Toledo Edison
Average Residential	\$3.42	\$3.42	\$3.43	\$2.58	\$3.31	\$2.37	\$1.42
Average Commercial	\$1,001.70	\$1,001.70	\$762.27	\$501.00	\$512.40	\$582.30	\$948.90
Average Industrial	\$5,719.80	\$5,719.80	\$13,050.60	\$10,020.00	\$5,076.00	\$14,496.00	\$15,606.00

Note: Average Residential typical usage 750 kWh
 Average Commercial typical usage 300,000 kWh
 Average Industrial typical usage 6,000,000 kWh

The table above shows that in 2014, the average residential customer incurred a monthly charge between \$1.42 and \$3.43 for the energy efficiency and peak demand reduction mandates. Multiplying these numbers by 12 months in a year, the average residential customer would have paid between \$17.04 and \$41.16 for the energy efficiency and peak demand reduction mandates in 2014.

As of December 2014, the PUCO found that the total amount of the Mandates averaged out to be the following percentages of customers' total bills:²⁰

Alternative Energy and Energy Efficiency/Peak Demand Rider as a Percentage of Estimated Total Bill (as of December 4, 2014)

	AEP		Dayton Power & Light	Duke Energy	FirstEnergy		
Customer Class	Columbus Southern Power	Ohio Power	DPL	Duke-Ohio	Cleveland Electric Illuminating	Ohio Edison	Toledo Edison
Average Residential	3.61%	3.20%	3.64%	3.07%	4.75%	3.54%	2.25%
Average Commercial	3.59%	3.09%	3.05%	1.96%	2.80%	3.04%	3.54%
Average Industrial	2.47%	1.82%	2.96%	2.39%	2.63%	4.11%	3.89%

¹⁸ Thomas W. Johnson, PUCO Chairman, p. 4, Dec. 8, 2014

¹⁹ Thomas W. Johnson, PUCO Chairman, Exhibit C, Dec. 8, 2014.

²⁰ Thomas W. Johnson, PUCO Chairman, Exhibit D, Dec. 8, 2014.

Note: Average Residential typical usage 750 kWh
Average Commercial typical usage 300,000 kWh
Average Industrial typical usage 6,000,000 kWh

Future Costs of Mandates

The Study Committee heard testimony from Ryan M. Yonk, Ph.D. of Utah State University. Dr. Yonk, along with five individuals from Utah State University, published a comprehensive report in April 2015 entitled “Renewable Portfolio Standards: Ohio.” That report concluded that Ohio’s renewables mandate will lead to the following:²¹

- Significant increases in fiscal and economic costs between now and 2026
- A \$1,920,000,000 burden on Ohio ratepayers
- A \$52,000,000 decrease in investment
- A decrease in personal disposable income of \$258 million in 2026
- An increase in the unemployment rate by 10%, which equates to 29,366 jobs

The Study Committee did not receive any definitive data from the PUCO on the projected future costs of the energy efficiency and peak demand reduction mandates. In a letter from the PUCO to the Study Committee dated September 14, 2015, the PUCO stated that they do not currently have the capability to independently forecast the costs of implementing the energy efficiency mandates in future years with a high level of significance.

²¹ Ryan Yonk, Ph.D., Utah State University, p. 8, July 20, 2015.

Grid Congestion

PJM Interconnection testified at a Study Committee hearing about grid reliability and congestion. PJM is the Regional Transmission Organization operating in Ohio. PJM testified that there are adequate resources to meet the forecasted demand of customers plus a reserve margin.²² PJM also ensured the power grid will remain reliable with the retirement of generating plants because the PJM forward capacity market is attracting new resources. As shown on page 4 of PJM's slide attachment,²³ the PJM capacity market has successfully attracted over 35,000 MW of new generation or upgrades throughout the PJM region, compared to the 26,000 MW in retirement notices to date.

²² Andrew Ott, PJM Interconnection Executive Vice President of Markets, p. 3, Mar. 18, 2015.

²³ Andrew Ott, PJM Interconnection Executive Vice President of Markets, slide 4, Mar. 18, 2015.

The Clean Power Plan

On August 3, 2015, the United States Environmental Protection Agency (“US EPA”) released a final version of its proposed Clean Power Plan (“CPP”), a rule that sets performance rates and individual state targets for carbon dioxide emissions from existing power plants. Issued under the apparent authority of Section 111(d) of the Clean Air Act, the CPP seeks to reduce emissions by 32% nationwide by 2030, relative to 2005 levels.²⁴

Each state is given specific targets under the final version of the CPP. Under a rate-based carbon reduction plan, Ohio would be required to reduce its carbon dioxide emissions by 37% between 2012 and final implementation of the CPP.²⁵ That mandated target was increased by roughly 11% from the US EPA’s original proposed rule.²⁶ As illustrated in the US EPA’s chart below, under a mass-based carbon reduction plan, in which reductions are measured in short tons, Ohio would be required to reduce its carbon emissions by approximately 27%.

Interim (2022-2029) and Final Goals (2030)²⁷

	CO₂ Rate (lbs/Net MWh)	CO₂ Emissions (short tons)	
2012 Historic*	1,900	102,239,220	
2020 Projections (without CPP)	1,742	103,946,835	
	Rate-based Goal	Mass-based Goal (annual average CO₂ emissions in short tons)	Mass Goal (Existing) & New Source Complement
Interim Period 2022- 2029	1,383	82,526,513	83,476,510
Interim Step 1 Period 2022-2024**	1,501	88,512,513	88,902,150
Interim Step 2 Period 2025-2027**	1,353	80,704,944	82,020,069
Interim Step 3 Period 2028-2029**	1,252	76,280,168	77,522,714
Goal 2030 and Beyond	1,190	73,769,806	74,607,975

*US EPA made some targeted baseline adjustments at the state level to address commenter concerns about the representativeness of baseline-year data. These are highlighted in the CO₂ Emission Performance Rate and Goal Computation TSD.

**Note that states may elect to set their own milestones for Interim Step Periods 1, 2, and 3 as long as they meet the interim and final goals articulated in the emission guidelines. In its state plan, the state must define its interim step milestones and demonstrate how it will achieve these milestones, as well as the interim goal and final goal. See section VIII.B of the final rule preamble for more information.

²⁴ Craig Butler, Ohio EPA Director, Testimony Before the U.S. House of Representatives, p. 1-2, Sept. 11, 2015.

²⁵ Craig Butler, Ohio EPA Director, Testimony Before the U.S. House of Representatives, p. 2 Sept. 11, 2015.

²⁶ Craig Butler, Ohio EPA Director, Testimony Before the U.S. House of Representatives, p. 2, Sept. 11, 2015.,

²⁷ <http://www2.epa.gov/cleanpowerplanttoolbox/clean-power-plan-state-specific-fact-sheets>

A summary of Ohio's targets and requirements can be found at:

<http://www2.epa.gov/cleanpowerplantoolbox/clean-power-plan-state-specific-fact-sheets>

The final version of the proposed CPP also made energy efficiency optional, rather than a core requirement of the rule.²⁸

The US EPA estimates that its proposed CPP will cost between \$5,100,000,000 and \$8,400,000,000 in 2030.²⁹

²⁸ Craig Butler, Ohio EPA Director, Testimony Before the U.S. House of Representatives, p. 4, Sept. 11, 2015.

²⁹ U.S. EPA, Regulatory Impact Analysis for the Clean Power Plan Final Rule, August 2015, page ES-9.

Third Party Administrators

Third party administrators are “organizations that partner with utilities to find potential qualifying energy efficiency work or projects that will assist a utility in meeting its statutory obligations. Such administrators are often trade associations who are able to help facilitate finding energy efficiency savings through their unique relationships with, and knowledge of, their members’ operations.”³⁰ In most cases, third party administrators are afforded lump sum, periodic, or performance-based payments in exchange for their services.³¹ Instances vary case-by-case, but are often tied to performance.³² Performance is measured as a nominal amount for every kilowatt hour of realized energy savings.³³

Performance payments to third party administrators are paid by the EDU, but those expenses are recovered directly from ratepayers.³⁴

The PUCO submitted to the Study Committee the following list of third party administrators who have been previously paid by an EDU:³⁵

FirstEnergy Ohio

Council of Small Enterprises (COSE)
County Commissioners Association
Industrial Energy Users-Ohio (IEU)
Ohio Hospital Association (OHA)
Ohio Manufacturers’ Association (OMA)
Ohio Schools Council
Roth Brothers
The E Group
Association of Independent Colleges and Universities (AICUO)

AEP-Ohio

Ohio Hospital Association (OHA)
Ohio Manufacturers’ Association (OMA)

Dayton Power and Light Company

Ohio Hospital Association (OHA)
Ohio Manufacturers’ Association (OMA)

Duke

Not applicable

³⁰ Thomas W. Johnson, PUCO Chairman, p. 2, Nov. 24, 2014.

³¹ Thomas W. Johnson, PUCO Chairman, p. 3, Nov. 24, 2014.

³² Thomas W. Johnson, PUCO Chairman, p. 3, Nov. 24, 2014.

³³ Thomas W. Johnson, PUCO Chairman, p. 3, Nov. 24, 2014.

³⁴ Thomas W. Johnson, PUCO Chairman, p. 3, Nov. 24, 2014.

³⁵ Thomas W. Johnson, PUCO Chairman, Exhibit E, Dec. 8, 2014.

IV. RECOMMENDATIONS

After an extensive and comprehensive review of the Mandates, including eight public Study Committee hearings, seventeen witnesses, additional written testimony separately submitted, and two onsite visits, the following recommendations are submitted to the General Assembly:

Recommendation #1

Extend the SB310 Freeze Indefinitely

The US EPA, by promulgation of the proposed CPP, seeks to change the energy landscape significantly across the United States. Each state, including Ohio, will be handed interim and final targets that dictate carbon dioxide emission levels. However, there are a number of outstanding questions about the CPP that the US EPA has yet to answer, in addition to federal court lawsuits that challenge the very foundation of the rule. Until the US EPA provides greater clarity on the operation of the CPP, and until litigation is resolved, the General Assembly should freeze the Mandates at their current levels.

First, there are significant legal questions as to whether the federal government has the right to govern state electricity policy. For this reason, in addition to a number of others, Ohio has joined in a lawsuit with 14 other states to argue that Congress did not intend to grant the US EPA authority under section 111(d), directly or indirectly, to remake the national power system.³⁶ Governor Kasich also recently submitted a letter to President Barack Obama asking him to stay implementation of the rule until legal matters have been resolved.³⁷ Ohio Environmental Protection Agency (OEPA) Director Craig Butler also testified to Congress that “we are marching down the road toward implementing a rule with far-reaching economic consequences without any assurance that the rule is even a legal exercise of U.S. EPA’s authority.”³⁸

Consequently, as long as legal questions remain pending, the General Assembly should refrain from allowing escalating costs to be paid by Ohio ratepayers in the form of increased Mandates or making any significant changes to the State of Ohio’s energy policies without knowing whether the CPP will ever apply.

Second, freezing the Mandates indefinitely should provide the OEPA maximum flexibility to recommend a State Implementation Program, at the appropriate time, as well as corresponding legislation targeted to meet the goals of that program. Resumption of SB221 or any revised Mandates before resolution of the CPP could impede OEPA’s flexibility. The PUCO estimated the proposed CPP would have cost \$2,500,000,000³⁹ (the PUCO has yet to conclude a cost analysis of the final CPP). Given the magnitude of the cost impacts to Ohio ratepayers, the General Assembly should not impede OEPA’s flexibility at this time by either allowing the Mandates to resume or imposing any additional mandates. Once there is 100% certainty the CPP

³⁶ Craig Butler, Ohio EPA Director, Testimony Before the U.S. House of Representatives, p. 3, Sept. 11, 2015.

³⁷ Craig Butler, Ohio EPA Director, Testimony Before the U.S. House of Representatives, p. 3, Sept. 11, 2015.

³⁸ Craig Butler, Ohio EPA Director, Testimony Before the U.S. House of Representatives, p. 3, Sept. 11, 2015.

³⁹ Craig Butler, Ohio EPA Director, Testimony Before the U.S. House of Representatives, p. 2, Sept. 11, 2015.

becomes effective, any efficiency or renewable mandates should be imposed in a way to minimize the overall cost impact to Ohio ratepayers.

Finally, many questions remain unresolved, including, but not limited to, the following questions posed by the OEPA Director:

- How will advanced energy and qualifying technologies be determined?
- How will renewable energy credit be recognized from out-of-state sources?
- How will the demonstrated economic hardship aspects of Ohio's law be recognized by the US EPA?
- Will the US EPA allow credit for improvements already in place?
- Will Ohio's final targets be adjusted? If so, how?⁴⁰

The Director also testified that:

"The most common question we are asked is whether the targets in SB 221 or 310 are enough for Ohio to meet the Clean Power Plan carbon dioxide reduction targets. I wish I could provide a clear answer to this Subcommittee. Unfortunately, that is not possible. Throughout our comment process U.S. EPA has provided little guidance or clarity. Rather, they have repeatedly asked for advice and a thorough critique of their proposal."⁴¹

"Ohio power plants have significantly reduced carbon dioxide emissions from electricity generation below 2005 emissions levels. In fact, carbon dioxide emissions have dropped from 138 million tons in 2013 to 107 million tons in 2015 and we expect an additional 33.8 million tons by 2016...⁴² While the stated target of the CPP is to reduce CO2 emissions by 32% below 2005 levels by 2030, the USEPA is using 2012 as a baseline for CO2 emissions. Nothing done to meet the energy mandates outlined in SB221 prior to 2012 will count towards CO2 emission reduction."⁴³

Based on all of these facts, it is evident that an indefinite freeze of the Mandates is the best path forward for Ohio. Prematurely enacting legislation to comply with a federal rule that may never go into effect seems irrational and could saddle Ohio ratepayers with extraordinary and unnecessary costs. At this point, there is also insufficient guidance from the US EPA to rely upon in determining whether any of the energy efficiency achieved in Ohio under Ohio law prior to 2012 will count towards the emissions reductions of the CPP.

While the General Assembly should extend the freeze of the Mandates, the State of Ohio should simultaneously prepare for the possibility that the CPP may take effect in some form or fashion.

⁴⁰ Craig Butler, Ohio EPA Director, p. 9, Feb. 5, 2015.

⁴¹ Craig Butler, Ohio EPA Director, p. 9, Feb. 5, 2015.

⁴² Director Butler mentioned while testifying that he had reversed the numbers. The numbers here reflect that correction while the online written testimony still contains the error. A fact sheet with the updated numbers can be found at: <http://epa.ohio.gov/dapc/111drule.aspx>. It is unclear how significantly the Mandates affected these reductions, as SB221 was enacted during the period in question.

⁴³ Craig Butler, Ohio EPA Director, p. 6, Feb. 5, 2015.

Thus, the director of the OEPa must work closely with the General Assembly in addressing the uncertainty surrounding the CPP.

Recommendation #2

Provide an Expedited Process at the PUCO for the Review of New Utility Plans for Energy Efficiency

Whether the General Assembly allows the Mandates to resume at their current law rates or if an indefinite freeze is enacted, the General Assembly will need to address the issue of how to deal with the four EDUs' existing 3-year energy efficiency portfolio plans,⁴⁴ all of which are set to expire on December 31, 2016. While interested parties should no doubt have the opportunity to be heard on any future portfolio plan applied for by an EDU, the General Assembly should consult with the PUCO on how to develop an expedited review process that will enable portfolio plans to be effective by January 1, 2017.

Separately, beginning on January 1, 2017, all large industrial users are permitted to opt-out of the portfolio plan that is applicable to them by way of an expedited process at the PUCO.⁴⁵ Undoubtedly, the General Assembly should maintain the current law opt-out mechanism. Many, if not all, of the large industrial users invest millions of dollars in energy efficiency projects at their facilities because those projects provide an individual company with a competitive advantage. Such investments should be encouraged, and maintaining the opportunity for these large users to opt out of a portfolio plan will help accomplish that. Similarly, the General Assembly should extend to all mercantile customers, as defined in R.C. 4928.01, the same opportunity to opt-out if they choose to do so beginning on January 1, 2019.

Recommendation #3

Investigate and Ensure Maximum Credit for All of Ohio's Energy Initiatives

Ohio has a robust and diverse set of energy assets. As policymakers, the General Assembly should remain diligent in ensuring that the State of Ohio counts all forms of emerging renewable resources, advanced energy, and energy efficiency initiatives that have been implemented to date across the state. To do this, the General Assembly should do all of the following:

- Count “advanced energy projects” and “advanced energy resources,” as those terms are respectively defined in R.C. 4928.01, towards the 12.5% benchmark that EDUs and CRES suppliers currently must obtain by 2027. Because wind and solar are intermittent renewable resources, PJM values their capacity contribution at 13% and 38%, respectively, of their nameplate capacity.⁴⁶ This means that of the 8,800 MW of wind

⁴⁴ Pursuant to R.C. 4928.6610(C), a portfolio plan is a “comprehensive energy efficiency and peak-demand reduction program portfolio plan required under rules adopted by the public utilities commission and codified in Chapter 4901:1-39 of the Administrative Code or hereafter recodified or amended”.

⁴⁵ See R.C. 4928.6610 through 4928.6616

⁴⁶ Andrew Ott, PJM Interconnection, p. 4, March 5, 2015.

resources that are expected to be in operation by 2017, these resources contribute only about 1,150 MW of capacity or reliability value.⁴⁷ As such, the State of Ohio should not rely exclusively on highly variable resources, but instead look to any and all sources of alternative energy so that the state can count as many of those sources as possible.

- Determine the most effective way to further incentivize the deployment and counting of combined heat and power (“CHP”). A CHP system produces electricity and usable thermal energy using the same input fuel source.⁴⁸ At the beginning of September, the Study Committee visited Kent State University to visit a CHP facility. The CHP Panel that testified before the Study Committee identified 147 potential CHP sites in Ohio, each about 5 MW, for a total potential of 5,951 MW.⁴⁹ Benefits that this technology offers include: efficiency, reliability (and back-up capabilities), limiting grid congestion, reducing peak demand, and cost effectiveness.⁵⁰ Facilities that utilize CHP for their own power use can save significant amounts on monthly electric bills.⁵¹ Current Ohio law allows CHP to be counted as energy efficiency, but it is treated as a renewable on a very limited basis.⁵² If CHP is energy efficient, it should be counted towards the energy efficiency mandate. Simultaneously, if some portion of CHP is a renewable resource, that portion should also be counted towards the renewables mandate.
- Count all energy efficiency projects that have been implemented in the State of Ohio to date since 2008. This will require substantially broadening the types of energy efficiency savings that count towards compliance with the energy efficiency and peak demand reduction mandates, as compared to how the current PUCO rules and practices, which need correction, currently operate. In order to count as many energy efficiency projects as possible, the General Assembly should work in coordination with the Ohio EPA and the PUCO to come up with a method for counting projects that have not historically been counted. It is likely that the most effective way to do this is for the General Assembly to work with the EDUs to develop a method for them to capture energy efficiency projects that they previously could not, in order for those projects to be accounted for with the PUCO moving forward in the future.
- Investigate and maximize extra credit for low-income and multi-family housing. The CPP grants states “extra credit” for low-income and multi-family housing efficiency programs. If the recently passed measure in the budget bill (Amended Substitute House Bill No. 64 of the 131st General Assembly) that requires the Development Services Agency to separately bid out the PIPP load is successful, then the savings could be devoted to funding such a program.

⁴⁷ Andrew Ott, PJM Interconnection, p. 4, March 5, 2015.

⁴⁸ CHP Coalition Presentation to the Energy Mandates Study Committee, slide 19 April 16, 2015.

⁴⁹ CHP Coalition Presentation to the Energy Mandates Study Committee, slide 12, April 16, 2015.

⁵⁰ Patrick Smith Testimony, IGS Generation, p. 1, April 16, 2015.

⁵¹ Greg Collins Testimony, Energy Systems Group, p. 2, April 16, 2015.

Greg Collins cites in his testimony a 30 MW project that ESG is working to secure. The project would generate approximately \$10 million in annual benefits to the company.

⁵² CHP Coalition Letter, p. 1, Sept. 9, 2015.

Recommendation #4

Switch from Energy Mandates to Energy Incentives

SB221 required EDUs to meet specific energy efficiency benchmarks that total over 22% of energy savings by 2025 and peak demand reduction benchmarks that result in a 7.75% reduction in demand by 2018. SB310 effectively extended the deadlines to 2027 and 2020, respectively.⁵³ If the PUCO determines that an EDU has failed to comply with the Mandates, the PUCO must assess a forfeiture on the EDU.

SB221 also included renewable benchmarks that require EDUs and CRES providers to provide, by 2025, 25% of their electricity supply from alternative energy. A specific portion of that amount would need to be from solar energy. SB310 placed a temporary two year freeze on the above dates, and reduced the 25% benchmark to 12.5% by repealing the advanced energy component.

The continuation of the Mandates will be costly for Ohioans, and the penalties for not attaining the Mandates are overly punitive. At the same time, energy efficiency can provide great value if it is structured properly so that Ohio ratepayers pay less for electricity and the state uses less electricity overall. Therefore, during the indefinite freeze of the Mandates recommended above, the General Assembly should consider enacting legislation that would expressly allow EDUs to offer voluntary energy efficiency programs that operate to reduce Ohio ratepayers' electricity bills and overall electricity consumption in the State of Ohio. EDUs should continue to be able to provide cost-effective programs to customers, with possible opportunities to share resulting savings. Voluntary programs of this nature have worked successfully in other states.

The following are additional suggestions on how to switch from a mandate driven state to an incentive-based, energy efficiency driven state:

- Allow EDUs and CRES providers who provide material financial assistance to persons wishing to build projects that can be net metered to negotiate a lower price at which to buy the net metered electricity product. (Current law requires payment at the higher standard service offer (SSO) prices.)
- Consider other constructs for EDUs to fairly participate in distributed generation opportunities.
- Expand the Property Assessed Clean Energy program whereby the capital costs of energy efficiency or renewable improvements can be financed through property tax assessments paid over a period of years. There is current legislation pending in both chambers on this topic (SB185 and HB72 address this issue).

⁵³ SB310 gave utility companies the opportunity to choose to continue or modify their existing portfolio plans. If continued, the Mandates and deadlines from SB221 remained effective; however, if modified, the Mandates and deadlines from SB221 were extended two years. FirstEnergy chose to modify its portfolio plan, so the 2-year extension applies to it. AEP Ohio, Duke Ohio and Dayton Power & Light chose to continue their plans, so the 2-year extension did not apply to any of them.

- Incentivize the use of smart thermostats in residential homes so that consumers can remotely control energy usage while they are away.
- Investigate a market-based certification instrument for energy efficiency.

Recommendation #5

Declare that the General Assembly Retains Statutory Authority with Respect to Energy Policy and Dispatch Protocols

As stated previously, the General Assembly should have the freedom to independently make and determine the energy policy of this state. As such, the General Assembly must do the following:

- Clarify that, regardless of the fate of the CPP, OEPA has no new state statutory authority, absent action by the General Assembly, to:
 - require utilities to acquire renewable energy
 - require the achievement of specific energy efficiency goals
 - promulgate a state or regional cap and trade system
- Ensure that all state agencies will work in concert with the General Assembly before submitting a State Implementation Plan under the CPP

Finally, the General Assembly should continuously review the energy landscape in Ohio and once the final determinations have been made as to the applicability of the CPP, stand ready to restructure the Mandates as necessary.



M E M O R A N D U M

Date: October 6, 2015

To: Ohio Manufacturers' Association

RE: Energy Mandates Study Committee report analysis

On September 30th, the Energy Mandates Study Committee (EMSC) issued its Co-Chairs' Report¹, a summary of testimony, findings, and recommendations stemming from eight public hearings across the past 11 months. The EMSC was charged with researching the renewable energy, energy-efficiency, and peak-demand reduction standards set forth in 2008 by Senate Bill (SB) 221 and subsequently paused for a two-year period in 2014 by SB 310. The EMSC is comprised of 12 legislators, 6 state Senators and 6 state Representatives from the Republican and Democratic parties, as well as the PUCO Chairman Andre Porter as an ex officio nonvoting member of the committee.

Following is an analysis of the EMSC Co-Chairs' Report, highlighting recommendations and findings of interest to manufacturers.

Recommendations

The EMSC Co-Chairs Report made five recommendations to the Ohio General Assembly.

1. Extend the SB 310 Freeze Indefinitely

Indefinitely freezing the renewable energy and energy-efficiency standards (the Standards) is the centerpiece of the report. The authors cite the federal EPA's pending Clean Power Plan (CPP) regulations to reduce carbon dioxide emissions from the electric sector as reason for the recommendation. The CPP relies heavily on renewable energy and energy-efficiency as tools for states to comply with their carbon reduction targets. The CPP is being legally challenged. The authors conclude that indefinite suspension of the Standards provides the Ohio EPA with "maximum flexibility" to devise a State Implementation Plan to comply with the CPP, should it survive legal challenges.

Of concern to manufacturers is how an indefinite freeze would affect electricity costs, and CPP compliance costs. Notably, the CPP references a baseline year of 2012, meaning that efficiency and renewable energy installed today and in the near term would count towards compliance under the CPP². Thus, future compliance costs could be significantly higher if the Standards are suspended as recommended. Additionally, multiple studies have shown energy-efficiency programs to suppress the price of electricity. This price suppression benefit would not exist if the efficiency standards are suspended.

¹ The full report can be downloaded here: <http://emsc.legislature.ohio.gov/Assets/Reports/emsc-final-report.pdf>

² <http://111d.naseo.org/Data/Sites/5/media/documents/energy-efficiency-in-the-clean-power-plan-fact-sheet.pdf>



2. Provide an Expedited Process at the PUCO for the Review of New Utility Plans for Energy Efficiency

The authors recommend an expedited approval process at the PUCO for utility energy-efficiency program filings, whether the Standards are frozen or not. During the existing two-year freeze, three of Ohio's four electric utilities have continued offering efficiency programs voluntarily, while the 4th – FirstEnergy – is offering programs that have costs but little in the way of benefits to manufacturers. Thus, there is a clear need for a robust PUCO process that incorporates stakeholder input to provide checks on utility interests. The OMA Energy Group regularly intervenes in these cases on behalf of manufacturers. Expedited approval processes at the PUCO could impair the ability of the OMA EG to protect manufacturing interest.

Additionally, the authors recommend expanding the stream-lined opt-out to all mercantile customers. SB 310 created a large-user opt-out, such that sub-transmission and transmission customers may forgo paying into utility energy-efficiency programs, and would also not be eligible to receive incentives for efficiency projects. For smaller users, a “mercantile self-direct” mechanism exists. The mercantile self-direct option allows manufacturers to forgo paying into utility efficiency programs if the manufacturer self-performs.

OMA has been a strong supporter of the mercantile self-direct option, as it provides flexibility to manufacturers. However, the streamlined opt-out as designed can create several issues of concern to manufacturers. First, it has the practical effect of reducing the quantity of efficiency capacity bid into PJM's capacity auctions, which in turn increases wholesale capacity prices. Second, a poorly designed opt-out can create cascading cost-shifting between manufacturers. This is because a utilities cost-recovery of efficiency program costs and profit is lagged from when the cost occurs. In practice, this is resulting in costs allotted to large users being unpaid, and shifted to medium and small users. While an opt-out has merit, and the spirit of providing manufacturer flexibility is right, a poorly designed opt-out can unintentionally create additional costs to Ohio's manufacturers.

3. Investigate and Ensure Maximum Credit for All of Ohio's Energy Initiatives

This recommendation contains two points of interest to manufacturers. First, the authors recommend allowing electricity generated by Combined Heat and Power (CHP) using renewable fuels to be an eligible renewable energy technology. If the CHP plant did not use renewable fuel, it would still be an eligible energy-efficiency technology. As it is written, this is a practical recommendation.

Second, the authors recommend counting all possible past energy-efficiency gains since 2008 towards compliance with the energy-efficiency standards. There are nuances to this recommendation that need to be considered carefully. Energy-efficiency gains that have not already been counted towards utilities' standards are those that have been completely financed by customers. In regards to the CPP, the carbon dioxide emissions from these projects should be counted for compliance, and would likely be eligible for those



implemented in 2012 or after. They would not be eligible as a capacity resource in PJM. All this said, there is no inherent need for the utility to serve the role as aggregator of these efficiency savings. In fact, this can be detrimental to manufacturers. For example, FirstEnergy has implemented a similar effort whereby they “capture” customer-financed efficiency. This program is costing ratepayers \$6 million, with no resulting benefit. Moreover, it is unclear if the carbon reduction attribute is taken by the utility without payment. In any case, the decision on how to monetize energy-efficiency attributes created by the manufacturer should be at the sole discretion of the manufacturer. Thus, this recommendation potentially creates costs to manufacturers, while infringing on manufacturer rights.

4. Switch from Energy Mandates to Energy Incentives

The authors recommend replacing mandated efficiency goals for the utilities with the ability for utilities to offer voluntary programs, coupled with incentives and expanded opportunities for customers. As mentioned, three of the four utilities have continued offering efficiency programs to customers, in spite of the two-year freeze. This suggests that well-run utilities view energy-efficiency services as a strategic part of their future business model. There are two potential consequences of allowing voluntary programs with an incentive, however. First, Ohio's utilities enjoy one of the highest profit margins on efficiency programs in the nation. While it is logical to allow some profit collection for this service, utilities outside of Ohio perform similarly well with much lower financial incentives. The discretion of how much profit margin to allow utilities to collect is best determined at the PUCO, where manufacturer interests can be represented and subject matter experts can debate an appropriate profit margin. In contrast, the recommendation of the EMSC to codify in law extremely high profit margins for utilities is not in manufacturers' interests. Second, voluntary programs provide significant leverage to the utility in the PUCO approval process, at the cost of manufacturers and other ratepayers. While some Ohio utilities have shown considerable responsibility with their efficiency programs, others would most likely use this increased leverage to create outcomes detrimental to manufacturers.

The remainder of the topics in this recommendation concern expanded ways for customers to implement energy-efficiency and renewable energy. This includes streamlined rules for site-specific Property Assessed Clean Energy (PACE), and market based energy-efficiency certification instruments. These provisions and others, if written correctly, have the potential to create additional benefits to manufacturers, lower costs, while laying the groundwork for innovation and entrepreneurialism in the advanced energy sector.

5. Declare that the General Assembly Retains Statutory Authority with Respect to Energy Policy and Dispatch Protocols

This provision limits the statutory authority of the Ohio EPA to create requirements to comply with the CPP without authority from the General Assembly.



Findings

The prominent finding that underlies much of the report recommendations is a summary of costs associated with the Standards. The summary shows that costs dramatically vary for efficiency from utility to utility, and costs for renewable energy credits are more expensive when sourced from Ohio-based renewable projects.

There are several major issues with the findings presented. First, only costs of the standards are considered. Numerous studies have showed that the Standards, energy-efficiency in particular, create substantial direct and universal benefits to manufacturers. While several witnesses attested to this fact, the EMSC did not consider financial benefits at all in their report. Moreover, the costs blend together the cost of the standards plus the high-profit margins utilities recover. This confounds the separate issues of whether efficiency program costs are appropriate, with whether the profit-margin utilities enjoy is appropriate. Finally, current and future costs of compliance were calculated referencing average costs from a recent month. The costs of the standards vary quite significantly from year to year though, meaning the method used by the EMSC may not reflect actual average costs.

Our Businesses Support Continued Energy Efficiency Growth in Ohio

As major Ohio employers and large energy users with a dedicated and loyal workforce of ~15,000 employees in the state, we are very concerned about Ohio's energy future and understand how energy policies affect the cost of doing business.

Energy efficiency is good for Ohio businesses.

- Energy efficiency programs are the least expensive way for Ohio to meet its energy needs.
- Other energy sources cost three-to-four times more than saving energy.ⁱ
- For Ohio consumers and businesses, electricity bills will be higher if other energy resources are pursued instead of energy efficiency.

Ohio's Energy Efficiency Resource Standard (EERS) was a big success and a key driver in expanding benefits and delivering cost savings for Ohio businesses and consumers.

- Every dollar invested in energy efficiency programs provides about \$2.50 in benefits.ⁱⁱ
- All Ohio businesses and consumers experience these benefits – whether or not they participate in energy saving efforts.
- Following the adoption of the EERS, energy savings delivered by Ohio utilities increased substantially, from 55GWh in 2008 to 1,571GWh in 2012. This represents a more than 28-fold increase.ⁱⁱⁱ
- The EERS and resulting energy efficiency programs created and support many direct and indirect jobs throughout the state.

A commitment to continuing and advancing energy efficiency would benefit Ohio and would give businesses the confidence to invest and grow.

- Policies that keep energy costs low and predictable over the long-term are a major consideration for our companies as we make business decisions and investments.
- A robust, multi-year EERS gives companies like ours confidence that Ohio is committed to keeping energy costs low, through policies that are clear and knowable.
- Policies like the EERS also help large commercial and industrial facilities reduce energy costs so they can compete in global markets.
- The repeal of the Energy Efficiency Resource Standard has introduced uncertainties that make it harder for us to consider the Ohio market in our long-term investment decisions.

We strongly support restoring Ohio's Energy Efficiency Resource Standard in 2016 and ending the freeze imposed by SB 310.



**United
Technologies**

**Schneider
Electric**

IR Ingersoll Rand.

ⁱ The cost per kWh for EERS programs in Ohio has been about \$0.01/kWh compared to about \$0.03-0.04/kWh for supply side options. See: Ohio's Energy Efficiency Resource Standard: Impacts on the Ohio Wholesale Electricity Market and Benefits to the State, 2013. Prepared for Ohio Manufacturer's Association by the American Council for an Energy Efficiency Economy; According to Dayton Power & Light's EE/PDR Program Portfolio Status Report to the PUCO for 2014 (Docket No. 15-777-EL-POR), avoided energy costs ranged from \$35.38/MWh to \$41.53/MWh over a five-year period. These wholesale cost do not include the cost of capacity, transmission or distribution.

ⁱⁱ FirstEnergy Companies' EE/PDR Program Portfolio Status Report to the PUCO for 2014 (May 15, 2015), Docket Nos. 15-0900-EL-EEC, 15-0901-EL-EEC, 15-0902-EL-EEC. FirstEnergy recently reported that its energy efficiency programs delivered \$2.41 to \$2.76 in benefits for every dollar invested in 2013 and 2014. Other Ohio utilities have reported similar results.

ⁱⁱⁱ Midwest Energy Efficiency Alliance, "Benefits of Energy Efficiency in Ohio," http://www.mwalliance.org/sites/default/files/uploads/MEEA_2014_Ohio-EE-Expo_Fact-Sheet.pdf

• BUSINESS

With Market on Their Side, Electric Utilities Skip Fight Against Carbon Rule

Cheap natural gas, falling costs for wind, solar already have power companies on low-carbon path

By

REBECCA SMITH

Oct. 11, 2015 7:33 p.m. ET

U.S. coal companies and at least 16 state governments are working on challenges to the Obama administration's new rule limiting carbon emissions from power plants. Most electric utilities have a different strategy: They are embracing it.

From [Dominion Resources](#) Inc. in Virginia to [Dynegy](#) Inc. in Houston to Ohio's [FirstEnergy](#) Corp., electricity producers say they plan to comply rather than contest the regulation.

The main reason, executives and experts say, is that economic forces are pushing the power industry inexorably toward a lower-carbon future.

"Everybody is moving in this direction anyway," said Dominion Chief Executive Tom Farrell.

The new regulations just add certainty to companies' plans to move away from relying on coal to generate

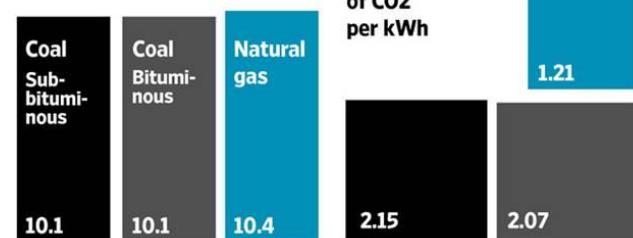
electricity, turning instead toward cheap natural gas as well as renewable energy, which is available at increasingly lower cost.

Energy Trade-offs

It takes fewer British Thermal Units of coal than gas to make a kilowatt-hour of electricity...

...But natural gas produces far less carbon dioxide for each kilowatt-hour of electricity

Heat rate (Btu per kWh)



Note: Subbituminous is mostly western coal, Bituminous is mostly an eastern coal
Source: U.S. Energy Information Administration

THE WALL STREET JOURNAL.

"Price is a larger force in electricity markets today than what Washington is doing with regulations," said Todd Carter, president of Panda Power Funds, a private-equity investor and generating-plant developer based in Dallas.

Panda Power Funds is building a huge gas-fired power station in central Pennsylvania, adjacent to a 65-year-old coal plant that closed down last year.

Building near the old facility means Panda can reuse existing infrastructure like transmission lines and an electrical substation to save money.

Switching from an old coal plant to a modern natural-gas one can cut carbon-dioxide emissions by between 50% and 60% for each megawatt hour of electricity produced, according to the Environmental Protection Agency.

And although coal also remains a relatively cheap fuel, natural-gas plants can produce power at lower prices and are often much more profitable for the companies that own them.

“Our coal assets are still running but they’re not making any money,” said Bob Flexon, CEO of Dynegy, an independent supplier whose generating capacity is about 45% coal and 55% gas. “All the earnings are coming from our gas portfolio.”

That is partly because of the way electricity markets work. In much of the U.S., grid operators take bids from generators every day, tapping the lowest-cost resources first—often natural-gas plants.

But the market price is set by the last producer needed to meet that day’s electricity demand, which tends to be a coal plant. So natural-gas plants can often offer electricity at prices lower than coal plants but collect the higher price set by coal units.

In the wake of the U.S. shale boom, natural gas has become so abundant and so inexpensive—and forecasters expect it to remain so for years—that the EPA’s new carbon rule has provisions that prevent utilities from relying too much on a single fuel. Instead, the EPA regulation encourages development of renewable-energy projects.

Coal consumption by utilities fell so much in the first four months of the year that it may be headed toward a 25-year low, according to data released in August by the U.S. Energy Information Administration.

“The bulk of utilities have already started to make the transition away from coal,” said Jeremy Fago, PricewaterhouseCoopers LLP’s power and utilities deals leader. He said the rule’s emphasis on green electricity means “it effectively creates a national renewable-energy policy.”

To be sure, not every utility has agreed to go along with the EPA’s 15-year plan to cut carbon dioxide emissions from the power industry by 32% compared with 2005. Implementation is being left to the states, which must come up with plans to comply or face direct regulation from Washington.

So far, at least 16 states have expressed opposition to the regulation, and some are likely to file a formal suit once the EPA publishes the carbon rule in the Federal Register, which is expected to happen this month.

Some companies are testing the political winds in their states or are still analyzing the potential impact on customer bills and company earnings. Edison Electric Institute, which represents shareholder-owned utilities, is staying out of legal contests while working with utilities and states to plot a path forward.

North Carolina-based [Duke Energy](#) Corp., with utilities in the Midwest and Carolinas, is undecided. Lynn Good, Duke's chief executive, recently told investors that her experts continue to analyze the plan, though she noted, "I think there's flexibility there."

Some utilities are hedging their bets. Ohio-based American Electric Power Co. is urging the 11 states in which it operates utilities to draft carbon-reduction plans. But it is also participating in the Utility Air Regulatory Group, a loose federation of energy companies that has challenged the low-carbon rule in the past and may do so again.

Renewable energy is becoming more financially attractive for utilities. A recent survey by the Energy Department found that utilities paid 66% less for

wind power purchased under long-term contracts in 2014 than 2009, making it extremely competitive with electricity from the latest gas-fired plants.

Southern Power, a unit of Atlanta-based Southern Co., recently installed its first wind turbine at a 299-megawatt project in Kay County, Okla. It also announced the purchase in August of controlling interest in the 200-megawatt Tranquility solar facility in Fresno County, Calif., from Recurrent Energy, a unit of [Canadian Solar](#) Inc.

When combined with other existing and announced projects, these developments will boost Southern Power's green portfolio to a production amount equivalent to three big fossil-fuel plants, though production will be less because the wind doesn't always blow and the sun doesn't always shine.

The company made more electricity using natural gas than coal in the second quarter, something so unusual it was highlighted in an earnings call. Nevertheless, Southern said it is still studying the rule and deciding what its next steps will be.

Write to Rebecca Smith at rebecca.smith@wsj.com

By RYAN AUGSBURGER, CHARLES WILLOUGHAND MIKE COOK

November 14, 2015 12:00PM

Our states can't afford to delay pipeline projects

While we are currently enjoying the last days of the fall season here in the Midwest, we should not forget that winter looms ahead.

While we are currently enjoying the last days of the fall season here in the Midwest, we should not forget that winter looms ahead. Record cold spells this past winter drove up demand for natural gas and electricity across the United States. In the last decade, demand for natural gas has skyrocketed. Recent technological advancements have made new sources of natural gas readily available to Midwest customers, helping to make Ohio the eighth and Michigan the ninth largest consumers of natural gas in the United States.

This has driven the need for a direct pipeline to new natural gas sources. The fact is, existing pipeline infrastructure has failed to keep up with the growth and demand. Our regions and our businesses need a direct link to the abundant natural gas reserves in the Utica and Marcellus shale fields.

Despite representing varying business interests in two different states, our organizations recognize the need for more natural gas supplies. We know that having a steady supply of energy is an important part of our region's productivity, no matter what economic sector we're involved in.

That's why we've come together with a variety of other trade associations, business and union groups to support the responsible expansion of critical energy infrastructure across Michigan, Ohio, Pennsylvania and West Virginia. As part of the Coalition for the Expansion of Pipeline Infrastructure (CEPI), we strongly embrace the idea that we must invest in safe and reliable pipeline technology.

Construction of pipelines will boost our economies, provide more stable prices for consumers, increase efficiency and help our utilities provide better service. Lower energy costs will also help attract new business to our states and create jobs.

Reliable, secure and affordable supplies of this efficient and environmentally friendly fuel are a basic requirement for any modern industry and a critical factor when businesses make their siting decisions. Attracting new businesses to our states and

localities is important, but so is promoting a secure energy future for the business and people who already call Michigan and Ohio home. Pipelines will help all of us by holding down energy prices and ensuring reliable natural gas service is there when they need it, especially during our harsh winters.

In addition, the pipeline projects currently under consideration will create jobs and investment throughout our two states. Tens of thousands of temporary local, skilled-labor jobs will be created to support construction of the pipeline, including laborers, engineers, equipment operators, contractors and specialists. Increased employment taxes, and an uptick in hotel occupancies, retail, and demand for other goods and services are just some of the other indirect benefits that would further bolster many sectors of the states' economies.

There are those who oppose pipeline expansion on the grounds that we must protect the environment and advance sustainable energy. We on the coalition do not believe that those two goals are mutually exclusive. Natural gas is an important part of diversifying our states' energy portfolios and an important first step toward sustainable renewable fuel sources. As a clean burning, safe, alternative fuel, we believe natural gas will keep our region's economies growing.

We must make the most of our new nation's newfound energy abundance by supporting key infrastructure projects that will deliver natural gas to areas of the country where it is greatly needed. As a region, we need to support the construction of new pipelines.

Augsburger is vice president and managing director of public policy services for the Ohio Manufacturers' Association. Willoughby is director of energy and environmental policy for the Ohio Chamber of Commerce. Cook is secretary-treasurer for the Michigan Land Impact Contractors Association.

<http://www.cantonrep.com/article/20151114/OPTION/151119655>

Energy Legislation
Prepared by: The Ohio Manufacturers' Association
Report created on November 17, 2015

HB8 **OIL-GAS LAW** (HAGAN C) To revise provisions in the Oil and Gas Law governing unit operation, including requiring unit operation of land for which the Department of Transportation owns the mineral rights.

Current Status: 4/14/2015 - Senate Energy and Natural Resources, (First Hearing)

State Bill Page: <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-8>

HB23 **OIL-GAS LEASE INCOME** (AMSTUTZ R) To use one-half of any income from oil and gas leases on state land to fund temporary income tax reductions, to modify the law governing the use of new Ohio use tax collections, and to require the Director of Budget and Management to recommend whether or not income tax rates should be permanently reduced.

Current Status: 11/18/2015 - Senate Ways and Means, (First Hearing)

State Bill Page: <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-23>

HB64 **OPERATING BUDGET** (SMITH R) To make operating appropriations for the biennium beginning July 1, 2015, and ending June 30, 2017, and to provide authorization and conditions for the operation of state programs.

Current Status: 6/30/2015 - **SIGNED BY GOVERNOR**; Eff. 7/1/15

State Bill Page: <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-64>

HB72 **ENERGY IMPROVEMENT DISTRICTS** (CONDITT M) To authorize port authorities to create energy special improvement districts for the purpose of developing and implementing plans for special energy improvement projects and to alter the law governing such districts that are governed by a nonprofit corporation.

Current Status: 5/6/2015 - **BILL AMENDED**, House Public Utilities, (Fourth Hearing)

State Bill Page: <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-72>

HB83 **OIL-GAS ROYALTY STATEMENT** (CERA J) To require the owner of an oil or gas well to provide a royalty statement to the holder of the royalty interest when the owner makes payment to the holder.

Current Status: 3/10/2015 - House Energy and Natural Resources, (First Hearing)

State Bill Page: <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-83>

HB122 **PUBLIC UTILITIES COMMISSION MEMBERSHIP** (LELAND D) To require that each major political party be represented on the Public Utilities Commission, to specify that not more than three commissioners may belong to or be affiliated with the same major political party, and to require that Public Utilities Commission Nominating Council lists of nominees include individuals who, if selected, ensure that each major political party is represented on the Commission.

Current Status: 3/24/2015 - Referred to Committee House Government Accountability and Oversight

State Bill Page: <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-122>

- HB162** **SEVERANCE TAX RATES** (CERA J) To change the basis, rates, and revenue distribution of the severance tax on oil and gas, to create a grant program to encourage compressed natural gas as a motor vehicle fuel, to authorize an income tax credit for landowners holding an oil or gas royalty interest, and to exclude some oil and gas sale receipts from the commercial activity tax base.
- Current Status:** 5/12/2015 - House Ways and Means, (First Hearing)
- State Bill Page:** <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-162>
- HB176** **GAS-FUEL CONVERSION PROGRAM** (HALL D, O'BRIEN S) To create the Gaseous Fuel Vehicle Conversion Program, to allow a credit against the income or commercial activity tax for the purchase or conversion of an alternative fuel vehicle, to reduce the amount of sales tax due on the purchase or lease of a qualifying electric vehicle by up to \$500, to apply the motor fuel tax to the distribution or sale of compressed natural gas, to authorize a temporary, partial motor fuel tax exemption for sales of compressed natural gas used as motor fuel, and to make an appropriation.
- Current Status:** 11/18/2015 - House Finance, (First Hearing)
- State Bill Page:** <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-176>
- HB190** **WIND FARM SETBACKS-COUNTY** (BURKLEY T, BROWN T) To permit counties to adopt resolutions establishing an alternative setback for wind farms and to extend by five years the deadlines for obtaining the qualified energy project tax exemption.
- Current Status:** 11/18/2015 - House Public Utilities, (Second Hearing)
- State Bill Page:** <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-190>
- HB214** **PUBLIC IMPROVEMENT-PIPING MATERIAL** (THOMPSON A) To restrict when a public authority may preference a particular type of piping material for certain public improvements.
- Current Status:** 6/9/2015 - House Energy and Natural Resources, (First Hearing)
- State Bill Page:** <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-214>
- HB349** **STATE EMISSIONS PLAN** (SMITH R, GINTER T) To require the Environmental Protection Agency to submit a state plan governing carbon dioxide emissions to the General Assembly prior to submitting it to the United States Environmental Protection Agency, and to declare an emergency.
- Current Status:** 11/17/2015 - House Energy and Natural Resources, (First Hearing)
- State Bill Page:** <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-349>
- HB390** **NATURAL GAS-TAX EXEMPTION** (SCHAFFER T, RETHERFORD W) To exempt the sale of natural gas by a municipal gas company from the sales and use tax.
- Current Status:** 11/16/2015 - Referred to Committee House Ways and Means
- State Bill Page:** <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-390>

- HCR7** **TAX EXEMPT MUNICIPAL BONDS** (SPRAGUE R) To urge the President and the Congress of the United States to preserve the tax-exempt status of municipal bonds.
- Current Status:** 6/16/2015 - **REPORTED OUT**, House Local Government, (Third Hearing)
- State Bill Page:** <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HCR-7>
- HCR9** **SUSTAINABLE ENERGY-ABUNDANCE PLAN** (BAKER N) To establish a sustainable energy-abundance plan for Ohio to meet future Ohio energy needs with affordable, abundant, and environmentally friendly energy.
- Current Status:** 6/17/2015 - **ADOPTED BY SENATE**; Vote 32-1
- State Bill Page:** <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HCR-9>
- SB46** **LAKE ERIE DRILLING BAN** (SKINDELL M) To ban the taking or removal of oil or natural gas from and under the bed of Lake Erie.
- Current Status:** 2/18/2015 - Referred to Committee Senate Energy and Natural Resources
- State Bill Page:** <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-SB-46>
- SB47** **DEEP WELL BRINE INJECTION PROHIBITION** (SKINDELL M) To prohibit land application and deep well injection of brine, to prohibit the conversion of wells, and to eliminate the injection fee that is levied under the Oil and Gas Law.
- Current Status:** 2/18/2015 - Referred to Committee Senate Energy and Natural Resources
- State Bill Page:** <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-SB-47>
- SB58** **CONDITIONAL SEWAGE CONNECTION** (PETERSON B) To authorize a property owner whose property is served by a household sewage treatment system to elect not to connect to a private sewerage system, a county sewer, or a regional sewerage system under specified conditions.
- Current Status:** 3/4/2015 - Referred to Committee Senate Energy and Natural Resources
- State Bill Page:** <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-SB-58>
- SB100** **SALES TAX HOLIDAY-ENERGY STAR** (BROWN E) To provide a three-day sales tax "holiday" each April during which sales of qualifying Energy Star products are exempt from sales and use taxes.
- Current Status:** 3/4/2015 - Referred to Committee Senate Ways and Means
- State Bill Page:** <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-SB-100>
- SB120** **OIL-GAS LAW REVISION** (SCHIAVONI J) To revise enforcement of the Oil and Gas Law, including increasing criminal penalties and requiring revocation of permits for violations of that Law relating to improper disposal of brine.
- Current Status:** 3/10/2015 - Referred to Committee Senate Energy and Natural Resources
- State Bill Page:** <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-SB-120>

- SB164** **UTILITY SMART METER CONSENT** (JORDAN K) To require electric distribution utilities to obtain a customer's consent prior to installing a smart meter on the customer's property
Current Status: 5/27/2015 - Referred to Committee Senate Public Utilities
State Bill Page: <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-SB-164>
- SB166** **HORIZONTAL WELL EMERGENCY PLAN** (GENTILE L) To require the owner of a horizontal well to develop and implement an emergency response plan for the purpose of responding to emergencies.
Current Status: 10/7/2015 - Senate Energy and Natural Resources, (First Hearing)
State Bill Page: <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-SB-166>
- SB185** **SPECIAL IMPROVEMENT DISTRICTS** (SEITZ B) To revise the law governing special improvement districts created for the purpose of developing and implementing plans for special energy improvement projects.
Current Status: 10/7/2015 - **BILL AMENDED**, Senate Energy and Natural Resources, (Third Hearing)
State Bill Page: <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-SB-185>
- SCR6** **EXPORT-CRUIDE OIL** (BALDERSON T) The urge the U.S. Congress to lift the prohibition on the export of crude oil from the United States.
Current Status: 11/17/2015 - House Energy and Natural Resources, (First Hearing)
State Bill Page: <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-SCR-6>

Energy

OMA Energy Efficiency Peer Network - Nov. 11 Web Meeting: Compressed Air Systems

The OMA [Energy Efficiency Peer Network](#) will meet via webinar on [Wednesday, November 11](#), from 10:00 - 11:00 a.m. The topic of the meeting is: Low-Cost/No-Cost Compressed Air System Analysis.

This webinar will help you evaluate and tackle common low-cost/no-cost energy savings opportunities in compressed air systems. Members from Anheuser-Busch, Cooper Tire, and Crown Battery will share compressed-air energy-saving changes they've made in their plants. There is also a compressed air system metering kit that EEPN members can borrow to use on their own systems.

The OMA EEPN is open to all OMA manufacturing members at no additional charge. [Register here](#) or email [Peter Kleinhenz](#) at Go Sustainable Energy for more information. 11/5/2015

Ohio Challenges Clean Power Plan

Ohio Attorney General Mike DeWine joined with attorneys general and regulators from 23 other states in [filing a legal challenge](#) to the Obama administration's "Clean Power Plan." The states filed the suit the same day on which the plan's final rule was published in the Federal Register.

The states say the U.S. EPA "lacks authority under Section 111(d) of the Clean Air Act to force States to fundamentally restructure their electric grids ... (t)he rule is also illegal because it seeks to require States to regulate coal-fired power plants under Section 111(d) of the Clean Air Act even though the EPA already regulates those same plants under Section 112 of the Act. Double regulation is prohibited by the Clean Air Act."

The suit is before the D.C. Circuit Court of Appeals, which considers all lawsuits under the Clean Air Act. 10/26/2015

Study Rates States on Energy Efficiency

This week the American Council for Energy Efficiency Economy (ACEEE) issued its [annual state scorecard](#), ranking states for policies that drive energy efficiency utilization. California and Massachusetts rate highest for their state policies which are driven in part to reduce greenhouse gas emissions.

According to the ACEEE report, 20 states climbed in their rankings: "Maryland, Illinois, the District of Columbia, and Texas deserve recognition for improvement over the past year. Maryland increased its commitment to energy efficiency in 2015 by establishing new, more aggressive energy savings targets for utilities. Illinois is one of the first states to adopt the newest building

energy codes, and has increased the amount of energy efficiency available to utilities through procurement agreements with the Illinois Power Agency. Like Illinois, Texas has been aggressive in adopting the latest building energy codes, and has also taken notable actions to ensure code compliance across the state."

Ohio fell two spots to 27. [View the Ohio scorecard](#). 10/22/2015

Ohio and Neighbors Pool Resources to Support Gas Drilling

Earlier this month, Ohio joined forces with West Virginia and Pennsylvania to enter into a cooperative agreement to promote shale gas development in the three-state region. The agreement is intended to prevent the states from competing against each other in the race to attract investment.

Governor Kasich [announced](#) that state resources to provide marketing assistance, training and workforce development, as well as infrastructure investment, are all addressed in the agreement.

According to an Associated Press [article](#), the U.S. Energy Information Administration reports the three states have had 85% of the increase in U.S. natural gas production since January 2012. 10/22/2015

Energy Standards Study Committee Releases Report

A joint committee of the legislature established to study the state's energy efficiency and renewable energy standards released its report within the past week.

The committee made five basic recommendations. The implications of these general recommendations for manufacturing are: some costly, some potentially good, and some uncertain.

Read an analysis of the report [here](#). 10/8/2015

House Wants Oversight of Ohio's Clean Power Plan Compliance

Leading House Republicans have introduced legislation, [HB 349](#), which would require the Ohio EPA to submit its eventual plan for meeting the requirements of the federal Clean Power Plan to the Ohio General Assembly for approval. Under the bill, each chamber of the legislature would be able to reject the EPA plan and prohibit the agency from submitting it to the U.S. EPA.

The bill lays out a series of matters that the Ohio EPA must consider in constructing its compliance plan, including assuring that its plan is a "least cost" plan. 38 of 138

compliance approach to benefit consumers of electricity." 10/8/2015

Ohio Senate Urges Feds to Export Oil

The Senate this week approved [Senate Concurrent Resolution 6](#) to urge Congress to repeal the federal ban on the export of crude oil, sponsored by Senator [Troy Balderson](#) (R-Zanesville). The non-binding resolution received bipartisan support. The U.S. House of Representatives is expected to consider lifting the ban. 10/8/2015

Energy Mandates Study Committee Releases its Report

The Energy Mandates Study Committee this week published its [report](#). The committee was created by SB 310 of the 130th General Assembly to study Ohio's renewable energy, energy efficiency, and peak demand reduction mandates enacted into law by SB 221 of the 127th General Assembly. The Study Committee consisted of members of the Ohio House and Senate and the chairperson of the Public Utilities Commission of Ohio.

SB 310 froze Ohio's energy efficiency standards at 2014 levels for two years, 2015 and 2016, and provided that annual energy efficiency benchmarks would resume in 2017 on the same schedule outlined in SB 221, if the legislature did not act to further freeze, reduce, or eliminate the standards.

The committee has reported out five recommendations that the General Assembly can now adopt in whole or in part, or not at all.

The recommendations include: 1) Extend the SB 310 freeze indefinitely; 2) Provide an expedited process at the PUCO for the review of new utility plans for energy efficiency; 3) Investigate and ensure maximum credit for all of Ohio's energy initiatives; 4) Switch from energy mandates to energy incentives; and 5) Declare that the General Assembly retains statutory authority with respect to energy policy and dispatch protocols.

The media reported that the indefinite freeze was not favorably received by Governor Kasich. His office is reported as saying: "A continued freeze of Ohio's energy standards is unacceptable and we stand willing to work with the Ohio General Assembly to craft a bill that supports a diverse mix of reliable, low-cost energy sources while preserving the gains we have made in the state's economy."

The OMA agrees with the governor: Energy efficiency is the lowest cost energy resource and should be a part of a diverse energy resource mix. 9/30/2015

OMA's Energy Efficiency Peer Network Tours Crown Battery



Last month, OMA members participating in OMA's Energy Efficiency Peer Network (EEPN) toured Crown Battery in Fremont to see energy efficiency innovations.

Earlier this year, EEPN members toured Honda.

OMA members can participate in this energy work group led by OMA's energy engineering partner, John Seryak of Go Sustainable Energy LLC, to access the most up-to-date information in the areas of combined heat and power, waste heat recovery, and energy efficiency.

The work group meets via web-conference bi-monthly and undertakes plant tours periodically. [Learn more and sign up here](#). 10/1/2015

PUCO Staff Opposes FirstEnergy Rate Proposal

In a welcome development, the staff of the Public Utilities Commission of Ohio (PUCO) [filed testimony](#) recommending the agency deny FirstEnergy's proposal to guarantee profits from a handful of power plants by having customers subsidize them.

PUCO Senior Energy Specialist Hisham Choueiki said in testimony, "Staff recommends that the Commission deny rider RRS as it is currently proposed." The staff left the door open to an alternate approach to the utility's current proposal.

The OMA Energy Group opposes the utility's proposed plan, which would be costly to consumers and would constrain competition. 9/24/2015

DOE Calls for Doubling Energy Productivity

The U.S. Department of Energy (DOE) released a new report that proposes a roadmap for doubling U.S. energy productivity by 2030.

The report, "[Accelerate Energy Productivity 2030: A Strategic Roadmap for American Energy Innovation, Economic Growth, and Competitiveness](#)," models six strategies to achieve the goal. The model indicates the strategies would contribute "in aggregate to a net increase of \$922 billion in U.S. GDP by 2030. This is primarily supported by an increase of \$753 billion in household expenditures and by a \$169 billion increase in investment in products and services that increase energy efficiency." 9/22/2015

OMA Energy Group Opposes AEP "Massive Subsidy"

Ohio State University economist Edward W. (Ned) Hill [testified](#) on behalf of the [OMA Energy Group](#) in opposition to AEP-Ohio's rate case before the Public Utilities Commission of Ohio.

Hill stated: "AEP-Ohio's strategy to utilize a power purchase agreement as a massive subsidy from ratepayers to fund AEP-Ohio's non-regulated subsidiary's uneconomic electric generating units is flawed. Such a proposal, if implemented, would fundamentally distort the electricity wholesale energy markets. It would shift the financial risk of operating generation plants onto AEP-Ohio's ratepayers, placing the risk of market failure squarely on AEP-Ohio's distribution consumers. This would fundamentally undermine the intent of the Ohio General Assembly when it restructured Ohio's electricity markets in 1999."

Noting the particularly harmful effect on manufacturing, Hill further testified: "Research conducted at the Levin College shows that in 2010, Ohio had the highest level of manufacturing activity among the Midwestern states. Ohio's energy intensive industries are prominent parts of the state's economic base; these include primary metals, petroleum and coal products, chemicals, food processing, nonmetallic mineral production, paper manufacturing, and wood products. AEP Ohio's proposal would have significant negative effects on the manufacturing productivity of firms throughout these sectors." 9/14/2015

EPA's Butler Goes to Congress Over Clean Power Plan

Last Friday, Ohio EPA Director [Craig Butler](#) testified before the U.S. House of Representatives Committee on Science, Space and Technology Subcommittee on Environment.

Director Butler's [testimony](#) focused on the final Clean Power Plan (CPP) issued by U.S. EPA earlier this summer. The director said, "With unresolved legal challenges, along with substantial changes between the draft and final proposal, U.S. EPA should hold off on implementing the final CPP until legal challenges are resolved or reissue the final CPP as a proposed action."

The director also made reference to a [letter](#) from Governor John Kasich to President Obama requesting

that the CPP implementation be suspended until the legal challenges are resolved. 9/17/2015

Ohio Oil/Gas Production Breaks Records

During the second quarter of 2015, Ohio's horizontal shale wells produced 5,578,255 barrels of oil and 221 billion cubic feet of natural gas, [reports](#) the Ohio Department of Natural Resources.

These numbers break all previous production reporting records, going back 100 years.

Oil production increased by more than 3.1 million barrels and gas production increased by more than 133 billion cubic feet compared to the second quarter of 2014. 9/17/2015

FirstEnergy Cost Projections Off the Mark

Hearings continue this week at the [PUCO](#) on FirstEnergy's proposal to charge customers a rider, which the monopoly electric distribution company would use to purchase power from its unregulated generation companies. The OMA Energy Group opposes the proposal as a subsidized bailout of uncompetitive coal and nuclear power plants.

This week, FirstEnergy's own expert witness conceded that his projections, which the utility used to formulate the rate plan, were off, and in some cases significantly. In this [article](#), Cleveland Plain Dealer reporter John Funk notes that Ohio's deregulation laws are designed to require distribution utility companies to conduct power auctions and buy the cheapest available electricity on the open market. Not so if regulators approve FirstEnergy's proposal.

Learn more about the work of the [OMA Energy Group](#) in PUCO case intervention to protect manufacturers' cost of energy. Contact OMA's [Dan Noreen](#) or [Ryan Augsburger](#). 9/10/2015

Calling Supporters of Nexus Pipeline Project

Regulatory approvals are underway for the construction of the [NEXUS](#) interstate pipeline. The project will transport gas from Marcellus and Utica regions to markets including Michigan and Ontario, Canada. Since natural gas is a regional commodity, these types of projects can provide energy pricing stability to the entire region.

Member companies can show their support of the project in a number of ways. Use this NEXUS [supporter form](#) and return a scanned copy via email to OMA's [Ryan Augsburger](#). 9/3/2015

Hearings Continue on FirstEnergy Power Purchase Agreement

For months, an Ohio distribution utility company, FirstEnergy, has sought permission from state regulators to charge customers a rider to use to purchase power from a FirstEnergy subsidiary, FirstEnergy Solutions, for a long-term power purchase agreement. If approved, the utility's application would mean the monopoly distribution utility would lock in a long-term contract for its unregulated subsidiary that was not competitively sourced.

In [reporting](#) on the hearings, Cleveland Plain Dealer reporter John Funk cited this FirstEnergy witness testimony: "... customers also would be on the hook for about half of any improvements or upgrades FirstEnergy Solutions makes at the plants -- including a rate of return of just over 11 percent."

The [OMA Energy Group](#) is a party to the case at the PUCO and opposes the anti-free market scheme. 9/3/2015

PJM Capacity Prices up 37%

PJM just completed its base residual action for delivery year 2018/19. It is PJM's first auction under its new "Capacity Performance" rules. Prices in the Ohio region of PJM went up 37% to \$164.77/MW-day.

The auction procured 166,837 MW of capacity for delivery year 2018/19, giving the region a 19.8% reserve margin, well above the target of 15.7%.

The auction, which ran from August 10-14, also resulted in 3,500 MW of new capacity, most of it gas-fired. [RTO Insider](#) reports that UBS Global speculates that three of the combined cycle gas plants clearing the auction are plants proposed in Ohio: Advanced Power's 700-MW unit in Carroll County, Ohio; Clean Energy Future's 800-MW facility in Lordstown, Ohio; and the 550-MW NTE Energy unit in Middletown, Ohio. 8/25/2015

No-Cost Manufacturing Energy Assessments from University of Dayton Industrial Assessment Center

Since 1981, the University of Dayton Industrial Assessment Center (UD-IAC) has helped more than 900 facilities reduce energy costs and increase competitiveness by providing no-cost energy assessments to eligible manufacturers.

During these one-day assessments, a team of faculty and graduate students trained in industrial energy efficiency work with plant personnel to identify energy saving opportunities. Following the assessment, a customized report with detailed recommendations is developed and delivered within two to four weeks.

UD-IAC energy assessments have cost-effectively reduced annual utility costs for the most recent 25 participating manufacturers by about 13%. Qualifying facilities spend between \$100,000 and \$2.5 million on energy annually.

Contact the [UD-IAC](#), visit its [website](#), or contact OMA's energy engineering consultant, [John Seryak](#), for further information. 8/26/2015

"Stop Trying to Scare Ohioans"

Discussing the context of pending rate cases of FirstEnergy and AEP-Ohio with Columbus Business First reporter Tom Knox, Public Utilities Commission of Ohio (PUCO) chairman Andre Porter sent an unusually blunt message to the utilities: "Stop trying to scare Ohioans."

Both companies have asked the commission to require customers to subsidize operations of uneconomic power plants. FirstEnergy, in particular, has raised the specter of power failures should the commission not give it what it wants.

Knox [quotes the chairman](#) as saying Ohio should "stay the course." He said: "I think things are going to be fine here in the state of Ohio. I know that sometimes it seems as if there are folks who want to attempt to scare Ohioans, but that's not what we need to do. Let's stop attempting to scare Ohioans."

The [OMA Energy Group](#) opposes the two utilities' plans, yet aims for a future when the power companies are vibrant and innovative suppliers to manufacturing. 8/20/2015

Heads I Win, Tails You Lose

OSU economist Ned Hill, on behalf of the [OMA Energy Group](#), this week presented additional [testimony](#) on the FirstEnergy rate case pending before the Public Utilities Commission of Ohio (PUCO). In the case, FirstEnergy seeks to escape business risk, shifting that risk to customers, of operating two uneconomical generating plants.

Hill testified: "The Supplemental Stipulations are not in the public interest for two reasons. First, they adopt a scheme that will provide one certified retail electric supplier in Ohio with a competitive advantage in the Ohio market as its uneconomic generating plants will be subsidized by the Companies' ratepayers through approval of the Economic Stability Program and associated power purchase agreement (PPA).

Second, the Supplemental Stipulations and the PPA will deter entry into the power generation portion of the market by new competitors. Typically, if a market participant cannot compete in a competitive market, it will fail. Subsidizing an existing market participant in the hope that it may be able to compete at some point in the future is not in the public interest, nor is it good public policy. It will only deter entry and keep prices higher than they would be in a competitive market. The PPA can best be described as a coin-flip bet that FirstEnergy Corp. is making, one where it's "heads I win and tails you lose." 8/12/2015

PUCO Reports Long Term Forecast

On July 22, 2015, the Public Utilities Commission of Ohio (PUCO) released "Ohio Long Term Forecast of Energy Requirements." Under Ohio Revised Code, the PUCO is required to estimate state and regional energy needs over a five-, ten- and twenty-year period. The findings are then submitted in a report to the Governor's Office and General Assembly, identifying emerging trends related to energy supply and demand and the costs of energy to consumers, specifying anticipated energy needs.

[Here are highlights](#) from the report, summarized by OMA Connections Partner, Bricker & Eckler LLP. 8/13/2015

Clean Power Plan: Unprecedented Cost; Negligible Impact

The U.S. Environmental Protection Agency (EPA) this week released one of the most expensive and far-reaching rules in its history when it rolled out the [Clean Power Plan](#), designed to regulate carbon emissions from the electric power sector. The rule represents an unprecedented intrusion into affairs of the states that will increase costs for small businesses, manufacturers, and households while threatening electric reliability.

The OMA stands in opposition to this plan alongside business leaders from more than 170 organizations and trade associations in the Partnership for a Better Energy Future (PBEF). PBEF will continue to explore every possible remedy to make sure greenhouse gas (GHG) regulatory actions do not cost American jobs and hurt the U.S. economy.

The plan is expected to have a negligible impact on global GHG emissions, and may not reduce them at all, instead moving emissions to other countries that have not implemented similar restrictions, such as China and India.

The proposal includes numerous changes from the rule that was first proposed in June 2014. At the outset, however, it is clear that the numerous fundamental problems with rule not only remain, but have been exacerbated by the Obama administration's decision to make national emissions limits even more stringent. OMA, through PBEF, is committed to working through all available means to deflect the serious economic harms from this sweeping regulation. 8/4/2015

The Partnership for a Better Energy Future is a coalition of stakeholders representing nearly every segment of the U.S. economy, unified in our support for responsible energy regulations. The Partnership's fundamental mission is to ensure the continued availability of reliable and affordable energy for

American families and businesses.

Good Overview of Worrisome Proposed GHG Rules

The law firm of [Sidley Austin LLP](#) has compiled this [PowerPoint presentation](#) which provides an overview, timing, and elements of the landmark greenhouse emissions reduction plan, Clean Power Plan, proposed by U.S. EPA.

Detail includes a state by state graphic of the 2030 emission goal and a state specific illustration of the difference between the emission reduction target originally proposed and the higher final proposed goal. 8/6/2015

Ohio Reacts Critically to Clean Power Plan

This week with the unveiling of the new Clean Power Plan 111(d) rules, reactions in Ohio from both the regulator and residential consumer advocate were critical.

While the state appears ready to gear up for multiple stakeholder meetings to fully digest the impacts of the new rules, [Ohio EPA director Craig Butler](#) stated, "I believe it is irresponsible to implement these rules until the courts decide if the U.S. EPA has the authority because, like we often see, changes driven by such rules are irreversible. Allowing the courts a full opportunity to review the rule will determine if the plan is reasonable, justified and consistent with congressional intent. Forcing states to rush forward with implementation deprives the courts this opportunity and will drive changes that are unrecoverable."

[Ohio Consumers' Counsel](#) spokesperson Dan Doron warned that the regulations have the potential to increase electricity rates for Ohioans, who are already paying higher rates than residential ratepayers in 32 other states.

U.S. EPA's Ohio specific fact sheet can be reviewed [here](#). 8/6/2015

Electric Transmission Increases in AEP Service Territory - Check Your Bill

Ratepayers within the AEP-Ohio service territory may have noticed a jump in on their electricity bills earlier this summer. The increase is attributed to a new rider called the Basic Transmission Cost Rider (BTCR) that went into effect on June 1, 2015.

While lawyers for the OMA Energy Group contested the new rider, it was ultimately approved by the PUCO. Since the implementation of the new rider in June, some members (specifically, AEP-Ohio GS-2 and GS-3 customers) have seen a significant increase in their transmission costs.

OMA Energy Group chief counsel, [Kim Bojko](#) of Carpenter Lipp & Leland, encourages members to inspect your company's AEP-Ohio bills to determine impacts. [Read more about this](#) from Ms. Bojko.

new charges. 8/6/2015

Members who have been exposed to significant increases due to the BTCA are encouraged to contact the OMA's [Dan Noreen](#) or [Rob Brundrett](#) for more information about industry efforts to resolve these



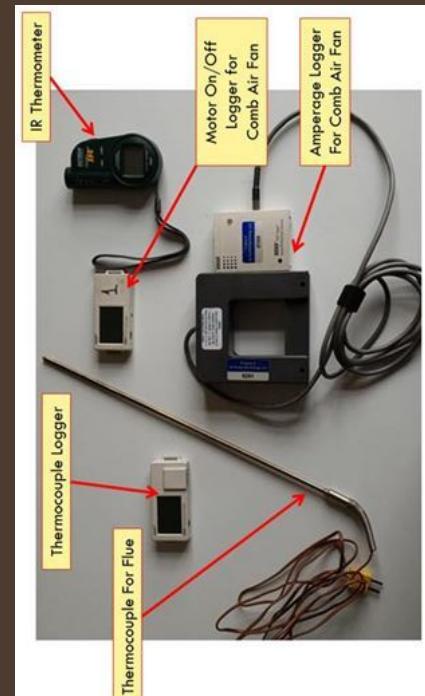
CUSTOMER-SITED RESOURCES REPORT

ENERGY EFFICIENCY - DEMAND RESPONSE - CHP - RENEWABLE ENERGY - STORAGE

ENERGY COMMITTEE – NOVEMBER 2015

Energy Efficiency Peer Network

- ❑ Planning 2016
 - ❑ Plant tours
 - ❑ Educational webinars
 - ❑ Technical assistance
 - ❑ DIY tools, logging kits
- ❑ Join - <http://www.ohiomfg.com/omas-chpweere-work-group/>





Utility	Efficiency Programs 2015-16	Opt-Out Available	Updates
AEP		No	<p><u>Rebate Cap</u></p> <p>Project incentives capped at \$25k unless receiving Bid4Efficiency funds</p> <p><u>Green Motor Rewind</u></p> <p>https://aepohio.com/save/business/programs/EmotorRewindProgram.aspx</p> <p><u>Financing w/ Key Bank</u></p> <p>https://www.aepohio.com/save/business/programs/EfficientFinancingPilot.aspx</p>
DPL		No	<p><u>CHP incentives</u> in custom program - \$0.08 /kWh, \$100 /kW, Cap - \$500k or 50% of cost</p>

EFFICIENCY – UTILITY PROGRAMS

Questions?

jseryak@runnerstonepower.com
614-268-4263 x302

Utility	Efficiency Programs in 2015-16	Opt-Out Available	Updates
Joint (DP&L, AEP)			Discounted cogged belt @ point-of-sale
Duke	Yes	No	Self-direct exemption should be evaluated in lieu of custom rebate
FirstEnergy	None	Yes	Rider persists, we recommend – Opt-out for above-primary customers – Self-direct exemption for secondary, primary
Municipals	Varied	No	27 communities in Efficiency Smart http://www.efficiencysmart.org/communities
Cooperatives	Minimal	No	+ Westerville, Cuyahoga Falls city run programs



- **Payments available** - PJM payments for energy-efficiency capacity available to all manufacturers; money on the table if you complete an efficiency project
- **Lowers electricity price** - Suppresses price of capacity
- **All can participate** - Especially important for manufacturers with no access to utility-operated energy-efficiency programs

*We kicked the tires,
it works*

- **DR and EE (ER15-852)** – FERC rejected PJM filing as premature, considering Supreme Court hearing of EPSCA v FERC
- Elimination of DR from capacity market would result in \$9 billion/year extra in costs
- At issue – whether demand response is a retail or wholesale product, which effects whether FERC has authority over it

Report released September 30th, 2015 with five recommendations

1. **Extend the freeze indefinitely** – Premise: freeze gives Ohio EPA “maximum flexibility” for Clean Power Plan (CPP) compliance
 - Concern: CPP baseline year is 2012, compliance costs could be higher
 - Concern: Efficiency price suppression benefit at risk
2. **Provide utilities expedited review at PUCO for efficiency program filings**
 - Concern: PUCO process needs to allow manufacturers to protect their interests
 - Concern: Expanding “opt out”. Spirit of manufacturer flexibility is right, changes to opt-out or exemption process need to pay attention to cost shifting & resource competition in capacity markets
3. **Investigate Max Credit for Ohio’s Energy Initiatives**
 - Merit: CHP using renewable fuel (likely biomass or biogas) eligible for RECs
 - Concern: Retroactive credit to utility for 2008 and later projects would not produce value; creates costs



Report released September 30th, 2015 with five recommendations

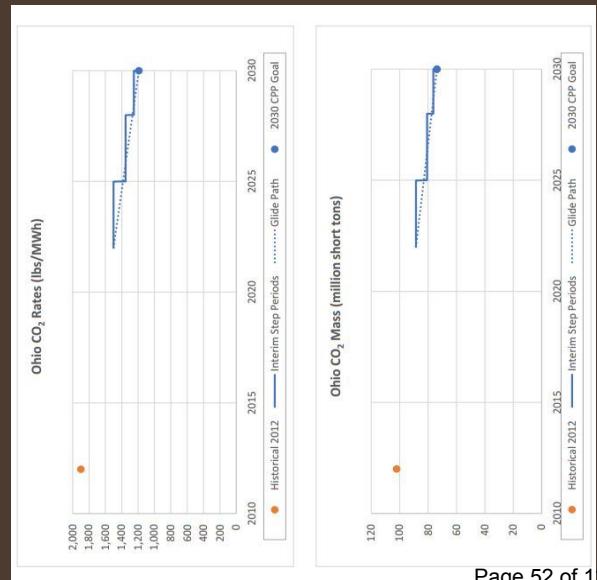
4. Switch from Mandates to Incentives

- Merit: Streamlined Property Assessed Clean Energy (PACE) financing
- Merit: Market-based energy efficiency certification instruments (potentially using PJM GATS)
- Concern: Ohio utilities have one of the highest energy-efficiency program incentive rates (aka, profit margins) in the nation. Switching mandate to incentive may just codify these high profit margins, limit manufacturer engagement at PUCO

5. Declare General Assembly Statutory Authority – Limits statutory authority of the Ohio EPA to create requirements to comply with the CPP without authority from the General Assembly.

US EPA released final Clean Power Plan rule on August 3rd, 2015

- State implementation plants due 9/6/15
- States can file a 1-year extension, 2-year extension if submitting a multi-state plan



	Rate Based	Mass Based
2012 baseline	1,900 lbs/Net MWh	102 M. Short Tons
2022 goal	1,501 lbs/Net MWh	88.5 M. Short Tons
2030 goal	1,190 lbs/Net MWh	73.7 M. Short Tons

- Energy efficiency removed as a “building block”, eligible for compliance
 - Efficiency counts under both accounting approaches, rate-based and mass-based
 - Efficiency installed after 2012 counts towards compliance
 - Automatically under mass-based
 - With measurement and verification (M&V) under rate-based
 - So long as savings persist into compliance years
- CHP eligible for compliance
- Considerations
 - Lost opportunities under an extended freeze
 - Additional costs if efficiency is back-loaded
 - Accounting for non-utility efficiency projects
 - Ownership of carbon reduction asset (energy reduction credit, allowance)
 - Accounting for costs when efficiency program support not evenly distributed



M E M O R A N D U M

Date: November 19, 2015

To: Ohio Manufacturers' Association

RE: Energy Efficiency and the EPA Clean Power Plan

The US EPA issued its final Clean Power Plan (CPP) rule on August 3rd, 2015. The CPP sets custom carbon dioxide emission reduction goals for each state, and recommends a set of a flexible “building blocks” for each state to meet compliance. The US EPA has charged each state with developing a State Implementation Plan (SIP) to detail its compliance with the CPP regulation. SIPs are due September 6th, 2016. States may request a one year extension if filing a single-state plan, or a two-year extension if filing a multi-state plan.

In the draft CPP, four building blocks were presented – increasing efficiency of existing coal-fired power plants, increased generation from natural gas-fired power plants, increasing renewable energy generation, and increasing end-user energy efficiency. In the final CPP, energy efficiency was excluded as a building block. However, Ohio's carbon dioxide reduction goals actually increased in the final rule.

Reportedly, the exclusion of energy efficiency as a formal compliance building block was to prevent legal challenges to the CPP. Yet, the US EPA is still strongly encouraging states to utilize energy efficiency for compliance, going so far as to say “The Clean Power Plan puts energy efficiency front and center”¹. This has invited questioning as to the role of energy efficiency in CPP compliance – what projects count as energy efficiency? Does the time of implementation matter? Do efficiency projects count the same under rate-based accounting and mass-based accounting? Etc.

This memorandum documents facts regarding these key issues, and also items of consideration for manufacturers, including:

- Energy efficiency is an eligible compliance option for the CPP, under either the rate-based or mass-based approach accounting systems.
- Energy efficiency projects installed after the 2012 baseline year are eligible for CPP compliance.
- Energy efficiency projects need to produce actual electricity reductions to be eligible.
- Deferring investment in energy efficiency until after 2018 or 2022 could increase the cost of CPP compliance.

¹ <http://www2.epa.gov/cleanpowerplan/fact-sheet-energy-efficiency-clean-power-plan>



Ohio's CPP Goals

In conjunction with the final CPP rule, the US EPA issued “State at a Glance” briefs for each state, including Ohio². Ohio has final emissions goals for 2030, with an interim goal for 2022. Additionally, the EPA has requested that states detail in their State Implementation Plan (SIP) three intermediate emissions reductions milestones for “step periods” between 2022 and 2030. The table below is reproduced from Ohio’s “State at a Glance” memo. Importantly, note that 2012 is referenced as a baseline year.

Ohio's Interim (2022-2029) and Final Goals (2030)			
OHIO			
	CO ₂ Rate (lbs/Net MWh)	CO ₂ Emissions (short tons)	
2012 Historic ¹	1,900	102,239,220	
2020 Projections (without CPP)	1,742	103,946,835	
	Rate-based Goal	Mass-based Goal (annual average CO ₂ emissions in short tons)	Mass Goal (Existing) & New Source Complement
Interim Period 2022-2029	1,383	82,526,513	83,476,510
Interim Step 1 Period 2022-2024 ²	1,501	88,512,313	88,902,150
Interim Step 2 Period 2025-2027 ³	1,353	80,704,944	82,020,069
Interim Step 3 Period 2028-2029 ⁴	1,252	76,280,168	77,522,714
Final Goal 2030 and Beyond	1,190	73,769,806	74,607,975

1. EPA made some targeted baseline adjustments at the state level to address commenter concerns about the representativeness of baseline-year data. These are highlighted in the CO₂ Emission Performance Rate and Goal Computation TSD.

2, 3, 4. Note that states may elect to set their own milestones for Interim Step Periods 1, 2, and 3 as long as they meet the interim and final goals articulated in the emission guidelines. In its state plan, the state must define its interim step milestones and demonstrate how it will achieve these milestones, as well as the interim goal and final goal. See section VIII.B of the final rule preamble for more information.

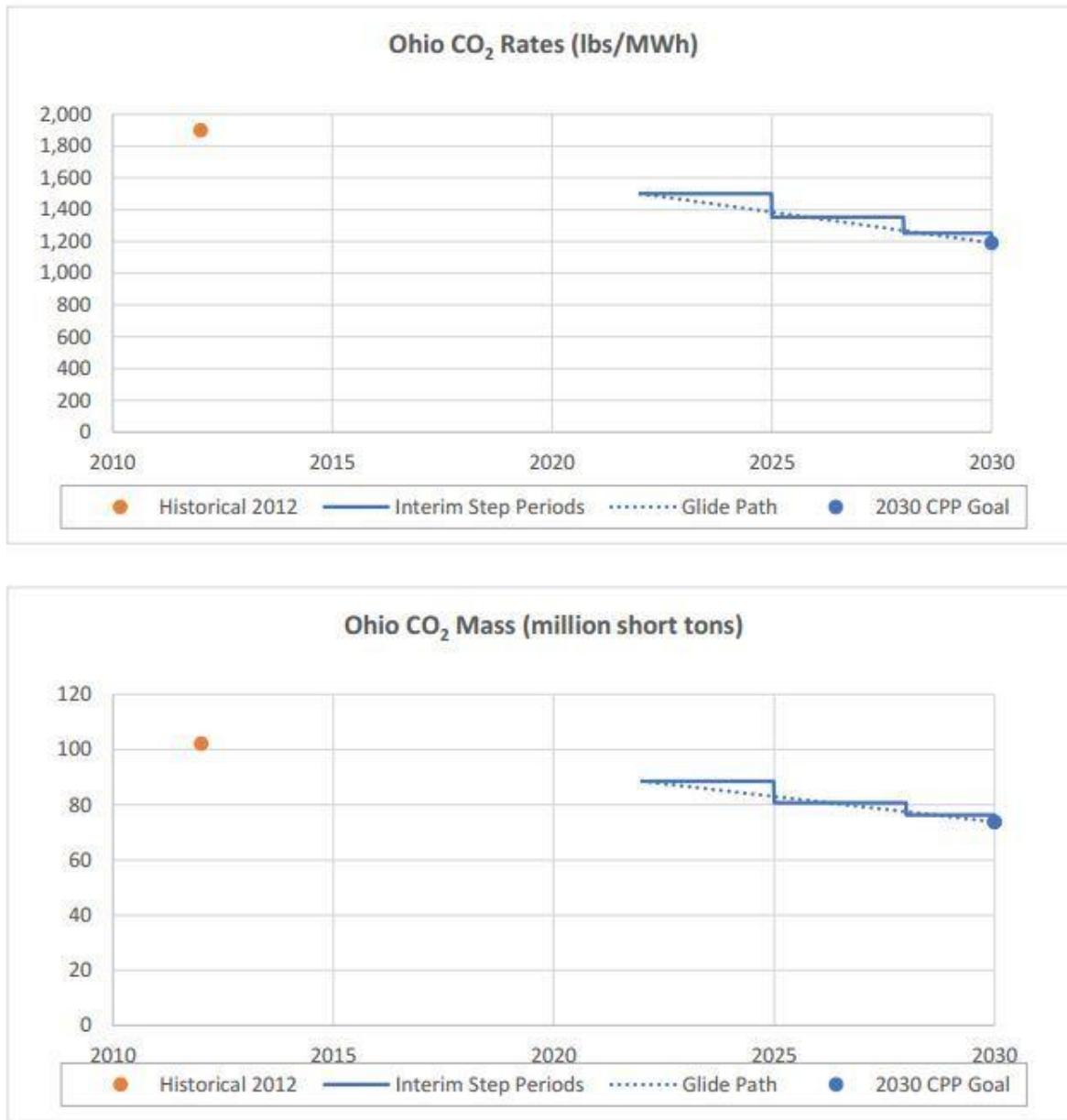
Source: “Clean Power Plan: State at a Glance / Ohio”

Figure 1: Ohio's Interim and Final Rate-based and Mass-based Goals

² <http://www3.epa.gov/airquality/cpptoolbox/ohio.pdf>



Ohio's State at a Glance memo also illustrates these goals, which we reproduce in the next figure. Note that mandatory compliance doesn't begin until 2022.



Source: "Clean Power Plan: State at a Glance / Ohio"

Figure 2: Illustration of Ohio's Rate-based and Mass-based Goals

Ohio's 2022 interim and 2030 final compliance goals are a matter of fact, as are Ohio's emissions in 2012. Less clear is what Ohio's emissions are today at the end of 2015, and what Ohio must do in



the years between 2015 and 2022 to achieve compliance. Electric sector emissions and generation output are reported publicly by the US Department of Energy's Energy Information Administration (EIA), but the reporting lags by several years.

Energy Efficiency as a Compliance Strategy

As previously discussed, the removal of energy efficiency as a building block has invited questioning as to its role in achieving CPP compliance. According to the US EPA, however, “The Clean Power Plan puts energy efficiency front and center”.³

A key consideration of using energy efficiency for CPP compliance is timing of the efficiency projects. Obviously the emissions quantity and rate goals for the 2022 interim compliance period are significantly lower than the 2012 baseline. Emissions reductions could come in the form of a “step” down over a short period of time, or a “ramp” down over a longer period of time, or a combination of both. For example, if coal plants are replaced with natural gas plants, we could expect a step down in emissions at the time of coal plant retirement.

Energy efficiency, in contrast, would not affect emissions as a “step”. This is because unlike power plant projects, large emissions reductions from efficiency are spread across potentially tens of thousands of projects. These projects won’t come “online” all at once, like a power plant, but instead are enacted more evenly over the course of many years. Moreover, some efficiency gains are made at very specific times, such as equipment failures, or are closely tied to a business’s capital budget cycle. Thus, if efficient choices are not made at these times, they are essentially lost for years if not decades. Consider equipment failure or end-of-life situations. Many types of equipment (lights, motors, chillers, pumps, fans, air compressors), are only replaced once every 15-30 years. In other words, some percentage of lost efficiency opportunities in 2015-2021 will not be revisited by those businesses until 2030 to 2050. For this reason, it may be critical for Ohio to capture these efficiency opportunities during the years between present day and the 2022 compliance period.

Efficiency Accounting in the Mass-Based Method

The EPA is encouraging states to use energy efficiency for compliance under either the rate-based or mass-based accounting methods. Under the mass-based method, energy efficiency will automatically count, as it will automatically reduce carbon-dioxide emissions. According to the EPA, states can use unlimited amounts of energy efficiency. And, under a mass-based approach, energy efficiency does not need to be an explicit part of the SIP.

Efficiency projects will count under the mass-based method so long as they actually do reduce electricity use, and that electricity reduction persists. In this sense, any real project that has been implemented since the baseline year of 2012 will count under the mass-based method. For example, consider a manufacturer that replaced its high-bay metal halide lights with efficient high-bay fluorescent fixtures in 2013. This efficiency project will reduce electricity consumption substantially and in turn carbon-dioxide emissions. The energy reduction and emissions reduction will persist in

³ <http://www2.epa.gov/cleanpowerplan/fact-sheet-energy-efficiency-clean-power-plan>



time so long as the efficiency project isn't reversed. In this case, it is extremely unlikely that any manufacturer would revert back to inefficient lights. So, the energy and emissions savings will persist, and thus count, for compliance not just in 2022, but also in interim periods and the final compliance year of 2030.

In some cases, certain types of efficiency projects have short persistence periods. An example is the temporary energy reduction from behavior changes in the residential sector from home energy reports. These savings may not persist indefinitely, as behavior can revert back to the inefficient practice.

A number of recent changes to Ohio law by SB 310 could create "efficiency" resources which are nothing more than on-paper resources, and may not count towards compliance in the mass-based method. We will detail these concerns at the end of this memorandum.

Efficiency Accounting in the Rate-Based Method

Under a rate-based method, all efficiency projects installed after 2012 are eligible for credit during the compliance period, so long as those projects are verified and still in place. This is explicitly stated in the CPP⁴. Energy efficiency undertaken in the rate-based approach would require evaluation, measurement and verification (EM&V) to receive energy reduction credits (ERCs). EM&V is standard practice for utility-operated efficiency projects, but is less common for self-financed efficiency, performance contracting, or upstream efficiency policies like building codes and appliance standards. Thus, while there is a good EM&V infrastructure in the state, expanding it would require attention and care.

That said, it is quite clear and matter-of-fact that energy efficiency projects installed after 2012 via utility operated efficiency programs would count towards compliance, as utilities already conduct this type of EM&V. Under a rate-based method, the SIP would likely want to address how to account for and credit efficiency projects enacted outside of utility programs during the 2015-2022 timeframe.

The CPP's EM&V guideline details a number of terms to avoid double-counting of efficiency projects which might conflict with recent changes to Ohio law by SB 310. We will detail these concerns at the end of this memorandum.

Clean Energy Incentive Program

The CPP offers a bonus for energy efficiency achieved via the Clean Energy Incentive Program (CEIP). Efficiency conducted under the terms of the CEIP will count double towards compliance in both the mass and rate-based approaches. However, CEIP has very narrow terms. First, it only applies to low-income residential efficiency projects. Second, it only applies to these projects completed after SIP submission (September 6th, 2018) and before the 2022 compliance period. Low-income **residential** efficiency projects completed prior to 2018 would still count towards compliance,

⁴ See Page 14, Section A. 3. "The program is designed to incentive investment in certaing types of RE projects, as well as demand-side energy efficiency (EE) projects in low-income communities. ...these EE projects must commence implementation afte the date of submission of a final plan to the EPA...on or after September 6, 2018"



just at the standard rate. Commercial, industrial, and non-low-income residential projects would be unaffected, and qualifying projects completed after 2012 would count towards compliance.

CHP

CHP is an eligible compliance technology for the CPP⁵, though it was not accounted for in the targets the EPA set for states. In a rate-based approach, CHP can earn “emission rate credits” (ERCs) for generating emissions-free MWh. EPA provides detailed guidance on how to explicitly write CHP into a compliance plan and directly adjust the reported CO₂ emission rate of affected EGUs. In a mass-based approach, CHP can earn “allowances” for emissions reductions, but there is less guidance for how states would count savings from CHP. EPA does not require specific EM&V protocols or accounting methodologies because compliance is measured via tons emitted at the source smoke stack. From this perspective, energy efficiency of all stripes automatically counts toward compliance, since it displaces emissions under the state’s cap and frees up allowances that can be traded. Under a mass-based approach, states need to develop their own methods for ensuring that CHP is incentivized, either by directly allocating allowances to CHP projects using a set-aside (specifically set aside for CHP) or by auctioning allowances and then using the proceeds from the auction to incentivize CHP.

Who gets compliance credit will depend on how states choose to structure their plans. In a rate-based approach, a CHP plant owner can clearly generate an ERC and sell that ERC to a utility that needs to satisfy its emission goals. Utilities could also earn ERCs if they own and operate CHP units off site. In a mass-based approach, states may choose to directly allocate allowances to energy efficiency providers (which could trickle down to owners of CHP systems) and those allowances could then be sold to utilities.

Considerations

Multiple studies have shown energy efficiency to be a least-cost energy resource. Maximizing least-cost energy resources has been a long-time priority of the OMA. The prospect of new emissions regulations on the electric sector only underscores the need for energy efficiency, which now is also a low-cost compliance tool. It is widely expected that energy efficiency will be critical to keeping compliance costs of the CPP low for manufacturers.

Therefore, increasing the quantity of energy efficiency achieved in Ohio has increased importance. There are several areas of concern, then, for manufacturers:

- Current and Proposed “Freeze” of Ohio’s Energy Efficiency Resource Standard (EERS) – EERS have shown to increase the amount of efficiency implemented in a region, in addition to saving consumers several times more than the costs. It is possible then that the two-year freeze (2015, 2016) of Ohio’s EERS is detrimental to low-cost compliance with the CPP. For example, during this period, FirstEnergy has suspended nearly all of its meaningful

⁵ CPP, p. 64902. “Electric generation from non-affected CHP units may be used to adjust the CO₂ emission rate of an affected [electric generating unit] EGU, as CHP units are low-emitting electric generating resources that can replace generation from affected EGUs.”



efficiency programs. As FirstEnergy accounts for about 3/8 of Ohio's investor-owned utility electric load, this creates a compliance gap. A further continuation of the freeze would exacerbate this situation.

- Lost opportunities – While some stalled efficiency projects from the current freeze or potential future freezes may be made-up prior to 2022, there are others that likely will not. These are “lost opportunity” projects: efficiency projects that need to occur at specific, rigid times. If the investment is not made at these times, it could be a matter of years or decades before a business is able to revisit upgrading the equipment. This includes efficiency investments made at the time of equipment replacement, in addition to large capital investments that can only occasionally be budgeted for in a business’s financial cycle. Manufacturers should pay increasing attention to their efficiency opportunities that can be made in conjunction with capital investment and/or equipment replacement. As a regulatory matter, OMA should focus on encouraging utility programs to design programs around this decision making process. As a policy matter, it is imperative to encourage efficiency in the short-term, such that these opportunities can be taken advantage of. Otherwise, some low-cost efficiency may be lost until after the 2030 compliance period.
- Non Investor-Owned Utility efficiency programs – The CPP applies to the entire state of Ohio. Ohio’s EERS law, however, applies only to investor-owned utilities. Municipal electric companies and rural electric cooperatives do serve enough electric load in Ohio to be able to contribute energy efficiency resources. Currently, some municipal electric companies offer energy efficiency programs, but not all. Similarly, rural electric cooperatives have limited efficiency offerings.
- Non-utility efficiency projects and programs – Significant amounts of energy efficiency projects can occur outside of utility-operated efficiency programs. This includes energy service contracting, property-assessed clean energy (PACE) finance programs, and self-financed efficiency programs. Under the mass-based method, all of these projects would create emissions reductions. Under a rate-based method, these projects and programs would need to undergo EM&V to receive ERCs and thus be used for compliance.
- Rate of Efficiency Gain – Studies have shown efficiency programs often become more economical over time, and with economies of scale. However, at very high rates of efficiency gain (for example, 2% savings/year), the cost of efficiency programs can increase measurably per kWh saved. Thus, eliminating or reducing efficiency standards today, and thus relying on higher rates of efficiency gains in later years, could have cost impacts to Ohio manufacturers.
- CHP – CHP is an eligible compliance technology under both the rate and mass-based accounting approaches.
- Asset Ownership – Both the mass and rate-based methods create new commodities representing the value of carbon reduction. The rate-based method creates energy reduction credits (ERCs) and the mass-based method creates “allowances”. In the mass-based method, though, allowances are distributed to effected electric generation plants, and some to



renewable energy projects. No allowances are distributed to efficiency projects. It is not clear then in the mass-based method how customer-financed efficiency projects would receive financial credit for reducing the regulatory burden on electric generators.

➤ SB 310 & CPP – A number of issues arise from law changes created by SB 310.

- *Retroactive Savings from 2006* – SB 310 created a law change so that “...solely at the option of the electric distribution utility, such savings and reduction achieved since 2006 may also be measured...” Because 2012 is the CPP baseline year, if utilities count savings from between 2006 and 2012 towards their EERS, these would not be eligible CPP compliance.
- *Optional baselines* - SB 310 created a law change that “Energy efficiency savings ...shall be measured on the higher of an as found or deemed basis”. This provision could inflate energy savings beyond what the CPP would allow for compliance under the rate-based method.
- *Production energy intensity* – Of importance to manufacturers is how improvements in production energy efficiency will be accounted for and credited. A simplified approach relying solely on energy intensity (kWh/part) would reward expanding manufacturers, while penalizing manufacturers in down production years. The CPP thus correctly recommends a regression-based method to account for production energy intensity improvements. Regression based methods are currently being inconsistently applied by utilities and the PUCO in Ohio.
- *Equity* – For a variety of reasons, some ratepayers in Ohio are currently paying for efficiency programs while others are not. Some utilities do not offer efficiency programs. Some customers are able to “opt-out” of paying for efficiency programs. However, efficiency programs are producing value, and will likely continue to produce financial value, for low-cost CPP compliance to all of Ohio’s ratepayers. Properly accounting for compliance contribution during the 2012-2022 years could thus be challenging.
- *Counting thermal energy* – SB 310 created a law change so that “renewable energy resources do not have to be converted to electricity in order to be eligible to receive renewable energy credits.” It does not appear that the CPP would allow thermal renewable energy to count for compliance, as it does not reduce electric sector emissions.
- *Citing specific federal standards* – SB 310 created a law change that “For new construction, the energy efficiency savings and peak demand reduction shall be counted based on 2008 federal standards...” Under the rate-based method, the CPP also will reference federal standards and codes as baselines. However, as codes and standards are regularly updated, citing a specific edition of a standard in the ORC is problematic, as it would need to be continually updated. Moreover, this specific



language is problematic, as the federal government does not adopt standards for building code.

DRAFT

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MEMORANDUM

To: OMA Energy Committee
From: Kim Bojko and Ryan O'Rourke, OMA Energy Counsel
Re: Energy Committee Report
Date: November 19, 2015

Active Administrative Actions in which OMAEG is Involved:

American Electric Power (AEP Ohio):

- ESP Application (Case No. 13-2385-EL-SSO, et al.)
 - Order issued on February 25, 2015.
 - Entry on Rehearing subsequently issued – PUCO deferred ruling on applications for rehearing related to the purchase power agreement (PPA) rider.
 - Applications for rehearing on the same are under consideration.
- PPA Rider Expansion Case (Case No. 14-1693-EL-RDR, et al.)
 - AEP filed an Amended Application in which AEP seeks PUCO approval of AEP's proposal to enter into a new affiliate PPA between the Company and AEP Generation Resources, Inc. (AEPGR), through which the Company would purchase the output of specific generating units owned by AEPGR.
 - The evidentiary hearing concluded this month and briefing is underway.
- Fuel Adjustment Clause Case (Case No. 11-5906-EL-FAC, et al.)
 - The PUCO is entertaining arguments on AEP's alleged double recovery of certain capacity-related costs.
 - Discovery is ongoing.
 - The PUCO selected an auditor to investigate the double-recovery issue.
 - An application for reconsideration is under review regarding the auditor's duty to share information with other parties.

Duke Energy Ohio:

- ESP Application (Case No. 14-841-EL-SSO, et al.)
 - Order issued on April 2, 2015, wherein PUCO approved establishment of the Price Stabilization Rider (PSR) regarding a PPA, but Duke was not authorized to collect any PPA costs through the PSR.
 - Several parties, including OMA, filed applications for rehearing of the PUCO's decision – the applications for rehearing are still pending.

- 2013 Shared Savings Incentive Audit Case (14-457-EL-RDR)
 - The PUCO recently issued a decision in which it adopted the rationale advanced by OMAEG in denying Duke the ability to collect a shared savings incentive for 2013 through use of banked energy efficiency savings in years in which Duke had not met its benchmark through savings achieved through its approved programs alone.
 - The PUCO granted applications for rehearing pending further review.
- Shared Savings Mechanism Extension Case (14-1580-EL-RDR)
 - Duke sought PUCO approval of its request to extend the use of its shared savings incentive mechanism in 2016.
 - The parties are awaiting a PUCO decision.

FirstEnergy:

- ESP IV Application (Case No. 14-1297-EL-SSO)
 - In late May and early June 2015, FirstEnergy filed two additional supplemental stipulations which included specific provisions for the purpose of gathering additional support for FirstEnergy's Economic Stability Program.
 - OMAEG filed testimony opposing FirstEnergy's application to establish a PPA Rider and addressing the supplemental and second supplemental stipulations.
 - The evidentiary hearing is over and briefing is underway.

Statewide:

- Challenges to the FirstEnergy Solutions RTO Expense Surcharge
 - Numerous complaints have been filed with the PUCO. The only activity has been that FES' motion to dismiss one of the complaints is on the PUCO's agenda this week.

Judicial Actions—Active Cases Presently on Appeal from the PUCO to the Supreme Court of Ohio

AEP Ohio:

- *In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Ohio Revised Code, in the Form of an Electric Security Plan*, Case No. 2015-1225 (Appeal of Case No. 13-2385-EL-SSO, et al.)
 - **Case Status:** The Ohio Supreme Court recently dismissed the appeal as premature given the pending rehearing requests at the PUCO.
 - **Brief Synopsis:** Appellants filed appeals of the PUCO's recent decision on AEP's ESP III, contending, among other things, that the PUCO erred when it established the PPA Rider and approved the Basic Transmission Cost Rider.

Duke Energy Ohio:

- *In the Matter of the Application of Duke Energy Ohio, Inc., for an Increase in its Natural Gas Distribution Rates*, Case No. 2014-328 (Appeal of Case No. 12-1685-EL-AIR, et al.)
 - **Case Status:** The matter is fully briefed; however the Court has not yet set the case for oral argument.
 - **Brief Synopsis:** OMA, OCC, Kroger, and Ohio Partners for Affordable Energy appealed a PUCO order that permitted recovery from ratepayers for environmental remediation costs associated with two former manufactured gas plant sites.

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application Seeking
Approval of Ohio Power Company's
Proposal to Enter into an Affiliate Power
Purchase Agreement for Inclusion in the
Power Purchase Agreement Rider
Case No. 14-1693-EL-RDR

In the Matter of the Application of Ohio
Power Company for Approval of Certain
Accounting Authority
Case No. 14-1694-EL-AAM

**DIRECT TESTIMONY OF
EDWARD W. HILL
ON BEHALF OF THE
OHIO MANUFACTURERS' ASSOCIATION ENERGY GROUP**

1 **Introduction, Purpose, and Summary of Conclusions**

- 2 Q. Please state your name, title, and business address.
- 3 A. My name is Edward W. Hill. I am Professor of Public Affairs and City and Regional Planning and a member of the Faculty of the Discovery Theme in Materials and Manufacturing for Sustainability at The Ohio State University's Glenn College of Public Affairs and College of Engineering. I recently retired as the Dean of the Maxine Goodman Levin College of Urban Affairs at Cleveland State University and Professor of Economic Development on June 30, 2015. My business address is 310P Page Hall, 1810 College Road, Columbus, Ohio 43210.
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- 10 Q. Please describe your educational background, professional qualifications, and employment experience.
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- 12 A. I graduated from the University of Pennsylvania with a bachelor's degree in economics and urban studies. I then attended the Massachusetts Institute of Technology where I earned a master's degree in City and Regional Planning and a Ph.D. in Economics and Regional Planning. My doctoral field examinations in economics were in industrial organization and regulation, labor economics, and urban and regional economics. In the Department of Urban Studies and Planning, my examinations were in regional economic development.
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I was a member of the Cleveland State University faculty since 1985. In addition, I was a Non-resident Senior Fellow at the Brookings Institution's Metropolitan Policy Program and Adjunct Professor in Public Administration at South China University of Technology for three years. I was also a Non-resident Visiting

September 11, 2015

1 Fellow at the Institute of Government Studies at the University of California at
2 Berkeley for five years, ending in 2013.

3 I was appointed Cleveland State University's first Vice President of Economic
4 Development in 2005. I relinquished that title in 2009 when I was appointed
5 Dean of the Levin College.

6 I was the inaugural chair of the National Institute of Standards and Technology's
7 Manufacturing Extension Partnership's National Advisory Board. I served in that
8 capacity from 2007 until 2010. I continued to serve on that Board until my term
9 statutorily expired in 2014.

10 I have also served on Ohio's Urban Revitalization Task Force (appointed by
11 Governor Taft), Auto Industry Support Council (appointed by Governor
12 Strickland), Cooperative Education Advisory Commission (appointed by Speaker
13 Batchelder), and the Manufacturing Task Force (appointed by Director Schenck).

14 My research has focused on the areas of urban and regional economic
15 development policy, the operation of regional labor markets, and industry studies
16 with an emphasis on manufacturing. My research has a particular emphasis on
17 issues that are important to the state of Ohio's economy.

18 I have written one book and am completing my second. I have edited five books,
19 written eight book-length reports, and have authored over 90 articles, book
20 chapters, and columns. I was the editor of *Economic Development Quarterly*
21 from 1994 to 2005. *Economic Development Quarterly* publishes peer-reviewed

1 research that is relevant to the development and renewal of the American
2 economy.

3 I participated in much of the energy research conducted at the Levin College
4 either as an advisor or as an investigator. I led the research and writing of the
5 publication titled *Ohio Utica Shale Gas Monior* and was one of the authors of *An
6 Analysis of the Economic Potential for Shale Gas Formations in Ohio* (February
7 2012).¹ I also advised the research team that produced the reports on the
8 electricity market that are referenced in this submittal.

9 Q. What is the purpose of your testimony?

10 A. I am testifying on behalf of the Ohio Manufacturers' Association Energy Group
11 (OMAEG). My testimony addresses the proposal of the Ohio Power Company
12 (AEP-Ohio) to enter into a new affiliate power purchase agreement (PPA)
13 between AEP-Ohio and AEP Generation Resources, Inc. (AEPGR) and to collect
14 the net costs associated with the PPA from ratepayers through the PPA Rider
15 (AEP-Ohio's Proposal).² Similar to another utility's proposal discussed below, I
16 believe that AEP-Ohio's Proposal is misguided, and the Public Utilities
17 Commission of Ohio (PUCO or Commission) should reject it.

¹ See, e.g., Edward W. Hill, et al., "Ohio Utica Shale Gas Monitor" (January 10, 2014) at <http://engagedscholarship.columbusohio.edu/bitstream/1744/1/43/>; Thomas, Andrew R., Irvin Lendel, Edward Hill, Douglas Southgate, and Robert Chase, "An Analysis of the Economic Potential for Shale Gas Formations in Ohio" (February 2012) at <http://engagedscholarship.columbusohio.edu/bitstream/1744/453/>.

² AEP-Ohio's Amended Application at 1-2 (May 15, 2015); superseding and replacing AEP-Ohio's original Application (October 3, 2014).

1 My testimony also addresses whether and how the Commission's findings in the
2 recent AEP-Ohio Order should be considered in evaluating AEP-Ohio's Amended
3 Application in this proceeding.³ In the AEP-Ohio Order, the Commission listed
4 several factors that AEP-Ohio should, at a minimum, address in any future filing
5 requesting future cost recovery associated with a PPA.⁴ The Commission also
6 stated that it will balance, but will not be bound by, the delineated factors in
7 deciding whether to approve future cost recovery requests associated with PPAs.
8 Those factors were listed as follows: financial need of the generating plant;
9 necessity of the generating facility, in light of future reliability concerns,
10 including supply diversity; description of how the generating plant is compliant
11 with all pertinent environmental regulations and its plan for compliance with
12 pending environmental regulations; and the impact that a closure of the generating
13 plant would have on electric prices and the resulting effect on economic
14 development within the state.⁵ In addition, the PUCO indicated that the rider
15 proposal must address additional issues, including a proposed process for a
16 periodic review and audit of the rider and an alternative plan to allocate the rider's
17 financial risk between both the utility and its ratepayers.⁶

1 Q. Please briefly summarize your conclusions.

2 A. AEP-Ohio's strategy to utilize a power purchase agreement as a massive subsidy
3 from ratepayers to fund AEP-Ohio's non-regulated subsidiary's uneconomic
4 electric generating units is flawed. Such a Proposal, if implemented, would
5 fundamentally distort the electricity wholesale energy markets.⁷ It would shift
6 the financial risk of operating generation plants onto AEP-Ohio's ratepayers,
7 placing the risk of market failure squarely on AEP-Ohio's distribution consumers.
8 This would fundamentally undermine the intent of the Ohio General Assembly
9 when it restructured Ohio's electricity markets in 1999 with the passage of Am.
10 Sub. S.B. 3.

11 Research conducted at the Levin College shows that in 2010, Ohio had the highest
12 level of manufacturing activity among the Midwestern states.⁸ Ohio's energy-
13 intensive industries are prominent parts of the state's economic base; these include
14 primary metals, petroleum and coal products, chemicals, food processing,
15 nonmetallic mineral production, paper manufacturing, and wood products. AEP-
16 Ohio's Proposal would have significant negative effects on the manufacturing
17 productivity of firms throughout these sectors.⁶

18 The Proposal would also undermine competition among retail electricity
19 customers in Ohio, and would have a chilling effect on future investments into

³In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to R.C. 4928.143, in the Form of an Electric Security Plan, Case No. 13-2385-EL-SSO, et al., Opinion and Order at 25 (February 25, 2015) (AEP-Ohio Order).

⁴AEP-Ohio Order at 25.

⁵Id.

⁶Id.

⁷For example, see Sanzillo, T. and C. Kunkel, "FirstEnergy: A Major Utility Seeks a Subsidized Turnaround," Institute for Energy Economics and Financial Analysis (October 2014) at <http://www.iefa.org/non-content/uploads/2014/10/FirstEnergy-A-Major-Utility-Subsidized-Turnaround-OCT2014.pdf> (Attachment EWF-1).

⁸Lendel, I., S. Park and A. Thomas, "Moving Ohio Manufacturing Forward: Competitive Electricity Pricing" (2013) at 4-7. *Urban Publications*, Paper 679 at http://engagedscholarship.osuohio.edu/urban_facpub/679 (Attachment EWF-2).

1 Ohio markets by Competitive Retail Electric Service (CRES) providers and other
2 generator owners.

3 Furthermore, the Proposal will extend and exacerbate the ongoing threat to Ohio's
4 economy and environment. It is designed to shore up coal-based electricity
5 generation at a time when it is becoming increasingly uneconomical due to both
6 the age of the plants and the introduction of large supplies of methane as an
7 alternative fuel source. At the same time, regulations designed to reduce the
8 amount of carbon released into the atmosphere from coal-fired power plants are
9 on the horizon. All of these factors will further increase the relative cost of
10 generating electric power from coal when compared to electricity generated from
11 other sources of fuel, especially natural gas. The Proposal is also being made at a
12 time when oil prices have plunged and as global energy markets are shifting
13 toward methane—natural gas.

14 The proposed PPA does not satisfy the Commission's AEP-Ohio factors as AEP-
15 Ohio has failed to demonstrate that the 20 generating units⁹ are necessary to
16 address reliability and supply diversity concerns or that the generating units will
17 actually close if financial assistance through the PPA is not provided. The PPA is
18 also not in the public interest as the generating units are not necessary to further
19 economic development in the region and will negatively affect manufacturers and
20 businesses that are important to the vitality of the region.

1 Asking ratepayers to subsidize a strategy for maintaining uneconomic generation
2 is a genuinely bad idea. Regulation needs to encourage an electricity generating
3 market that is not being distorted, does not reward market power, and moves the
4 state of Ohio toward economic efficiency. AEP-Ohio's Proposal is not the right
5 strategy to meet these goals.

6 Q. Have you previously filed testimony before the PUCO?

7 A. Yes. I have filed several pieces of testimony in Case No. 14-1297-EL-SSO
8 regarding a similar proposal by Ohio Edison Company, The Cleveland Electric
9 Illuminating Company, and The Toledo Edison Company (collectively,
10 FirstEnergy), seeking a subsidy from ratepayers to fund FirstEnergy's unregulated
11 affiliate's uneconomic generating units through a power purchase arrangement.

12 Q. Are your conclusions in the FirstEnergy proceeding different from this
13 proceeding?

14 A. No. My concerns in this proceeding regarding AEP-Ohio's request to enter into
15 an affiliate power purchase agreement between AEP-Ohio and AEPGR are
16 parallel to the concerns raised in the FirstEnergy proceeding pending before the
17 PUCO. Therefore, my testimony and conclusions are similar, if not identical, in
18 many respects.

19 Q. Effects of the PPA Proposal on Manufacturing

20 Q. What role do energy prices play in economic development?

21 A. We have long known that electricity prices play a significant role in economic
22 development. For instance, there is evidence that the best manufacturing jobs are

⁹ Direct Testimony of Pablo A. Vegas at 12 (May 15, 2015).

1 usually found in energy-intensive industries, which tend to require higher-skilled
2 workers.¹⁰ Similarly, it has been documented that energy costs are an important
3 site selection criteria for manufacturers; along with the location of customers,
4 suppliers, and labor supply.¹¹

5 **Q. How do you define energy intensive industries?**

6 A. Energy intensive industries are those that spend relatively large amounts of
7 money on energy in the course of their operations compared to other
8 expenditures. The research conducted at the Levin College's Urban Research
9 Centers by Lenard, et al, specifically examined intense users of electricity. The
10 team used two indicators to identify electricity-intensive industries: the ratio of
11 the industry's expenditure on electricity to the industry's total expenditure on its
12 operations, and the industry's total expenditure on electricity.

13 The team demonstrated that natural break points occurred in both data series. The
14 breaks resulted in three groups of industries: high electricity-intensive, moderate
15 electricity-intensive and non-electricity intensive.¹² The results are consistent

1 with the categories established by the Energy Information Agency for energy
2 intensive manufacturing.¹³

3 In Ohio, ten industries are considered to be electricity intensive (spending roughly
4 2 to 6% of every dollar of its industry operations). Atop this list are metals,
5 chemicals, foundries, food processing, paper manufacturing, glass manufacturing,
6 and nonmetallic mineral product manufacturing.¹⁴

7 **Q: What role do these industries play in Ohio's economy?**

8 A. These industries are a critical part of Ohio's economic base. Our research shows
9 that many of these industries export their products from Ohio in return for dollars
10 that are brought into the state, resulting in job creation.¹⁵

11 Steel manufacturing, for instance, is about three times more important in Ohio
12 than it is nationally, foundries and glass manufacturing about 2.5 times, and
13 chemicals nearly twice.¹⁶ All are related to the automotive and truck assembly
14 and aircraft supply chains, which are especially important industrial clusters in the
15 state of Ohio. These and similar industries are a major part of our export base,
16 and they stand to be hurt the most by AEP-Ohio's Proposal.

¹⁰ L. Lord and J. Rible, "A Case for Coordinating Economic Development Planning with Energy Planning," *7-2 South Carolina Journal of International Law and Business* 165, 173 (2011).

¹¹ Id. at 165; see also D. Buelow & J. Trujillo, "Factoring Energy into a Location Decision," *Area Development Magazine* (April/May 2009) at <http://www.readdevelopment.comSurveyResultsAndStrategicAvailabilityLocateLocationDesirableSite.html> (survey determining energy costs are the third most important factor in manufacturing site selection).

¹² See Attachment EWH-2 at 4-7.

¹³ Sendich, E. "The Importance of Natural Gas in the Industrial Sector with a Focus on Energy-Intensive Industries," Working Paper Series, U.S. Energy Information Agency (February 28, 2014) at http://www.eia.doe.gov/workingpaperseries/pdf/natgas_industry.pdf.

¹⁴ See Attachment EWH-2 at 4.

¹⁵ This is a result that is replicated in many studies conducted on Ohio's economy at the Center for Economic Development at the Levin College of Urban Affairs.

¹⁶ See Attachment EWH-2 at 10.

1 Q. Have you considered what likely effects the AEP-Ohio Proposal may have on
2 manufacturing?

3 A. Yes. The study conducted in 2013 by Lendel, et al., examined the gross state
4 product created per employee and measured how it changed with the cost of
5 electricity between 1990 and 2010. This gave an indication of the effects of
6 electricity price on productivity. Their results showed that higher electricity
7 prices have had a statistically significant negative effect on manufacturing
8 productivity in Ohio, as well as in four neighboring states.¹⁷

9 Q. Did you measure the size of this effect?

10 A. Yes. The study showed that an increase of one cent per kilowatt-hour correlated
11 to a decrease in gross product generated of about \$2,527 per employee, a total of
12 2.2%.¹⁸ In economic terms, this is a price elasticity of negative 2.2%. This will
13 be felt most keenly within the electricity-intensive industries.

14 Effects of the PPA Proposal on Electricity Markets

15 Q. Did Lendel, et al., also look at the effects of deregulation on manufacturing?

16 A. Yes. They looked at industrial power prices for five states for the period of 1990-
17 2010, two of which had not restructured their power generation markets (Indiana
18 and Kentucky) and three of which had (Ohio, Michigan and Pennsylvania).

1 Q. What were the findings?

2 A. Manufacturing productivity grew faster in the deregulated states than it did in the
3 regulated states. Manufacturing gross product grew by \$120,000/employee over
4 the twenty-year period for the deregulated states, but only by \$113,000/employee
5 in the regulated states. [All figures are in inflation-adjusted terms.] In the three
6 deregulated states, the average industrial price of electricity dropped after
7 deregulation and the average total productivity per employee increased.¹⁹

8 Q. What does this mean?

9 A. It means that, at least in part, the 2001 restructuring of electricity regulation that
10 was designed to introduce competition in the electricity markets has been working
11 to reduce costs to Ohio consumers, and to make Ohio manufacturing more
12 competitive.

13 The energy markets may be flawed in places, and they require constant vigilance
14 on the part of state and federal regulators to ensure that large utilities do not enjoy
15 too much market power and that power is reliably provided across the footprint of
16 the relevant grid, which in Ohio's case is PJM's territory. But the evidence, at
17 least in Ohio and the surrounding states, is that a competitive electric market has

¹⁷ Id. at 30-31.
¹⁸ Id.

1 helped to reduce industrial costs of electricity.²⁰ This in turn has helped energy
2 intensive industries in Ohio to be more competitive.

3 **Q. How is this relevant to AEP-Ohio's PPA Proposal?**

4 A. AEP-Ohio's strategy provides AEP-Ohio's affiliate, AEPGR, with a guaranteed
5 return on its generating assets. The strategy directly undermines the competitive
6 nature of the retail market for electricity in Ohio. It does this by introducing
7 subsidized generation into both the energy and the capacity markets, thereby
8 distorting those markets, and potentially driving lower cost generation out of the
9 market.

10 The effectiveness of a competitive marketplace relies upon the assumption that it
11 is free of monopolistic practices by the participants. The strategy proposed by
12 AEP-Ohio, to reintroduce certain aspects of traditional utility accounting practices
13 into the energy and capacity markets, is fundamentally incompatible with a free
14 marketplace.

15 It also sends the wrong message to CRES providers, national providers that have
16 over the years established a major presence in Ohio. The message it sends is that
17 the moment that they begin to out-compete Ohio's incumbent utility providers

²⁰ This conclusion was also reached in the recent econometric study released by COMPETE: O'Connor, P., and O'Connell-Díaz, E., "Evolution of the Revolution: The Sustained Success of Retail Electricity Competition," COMPETE Study (July 2015) (Attachment EWH-3). The study analyzed the competitive performance of 13 states and the District of Columbia against the inflation-adjusted price of electricity for all customer classes in the 35 states that did not deregulate electricity generation. The authors refer to the deregulated 14 as Consumer Choice jurisdictions and the regulated 35 as Monopoly jurisdictions. Of particular interest is the performance of deregulated Illinois as compared to its regulated neighbor Wisconsin. Illinois had the lowest rate of price increase from 1997 to 2014 (15.2%) while Wisconsin had the highest rate of increase (105.3%), giving new meaning to "On Wisconsin." (See Attachment EWH-3, Figure 10 at 7 and Appendix at 16).

1 (and/or their affiliates) and to establish market share in this state, the State will
2 step in and shore up the incumbent providers (and/or their affiliates) to the CRES
3 provider's detriment. This will have a chilling effect on future CRES provider
4 investment into Ohio.

5 Subsidizing a generation owner that is affiliated with an electric distribution
6 utility will destabilize the structure of the electricity markets in Ohio. Prior to any
7 attempts to re-regulate, the State needs definitive proof that deregulation is not
8 working. After such proof, if the State decides to re-regulate, it should regulate
9 the entire industry in the process, not just piecemeal generating facilities based
10 upon plant inefficiencies or generator owners' threats of closure. The evidence to
11 date indicates that market restructuring is working,²¹ and changing the rules
12 without a clear and convincing demonstration otherwise will send a signal that
13 will strongly discourage investment in the state.

14 **14. The Effects of AEP-Ohio's Proposal on Ohio's Economy in General**

15 Q. Do you see any other problems with AEP-Ohio's proposed PPA?

16 A. Yes. First of all, the Proposal would subsidize nine coal-fired generating units
17 owned, in whole or in part, by AEPGR.²² It would also provide subsidies to

²¹ Id. O'Connor and Diaz showed that as a group, the average weighted price for all customer classes in the 35 deregulated states and the District of Columbia fell against inflation, while the price rose in the 13 regulated states. Additionally, the Consumer Choice jurisdictions added 74,000 megawatts of summer capacity and had greater capacity factors than the regulated jurisdictions (see Attachment EWH-3 at 8-9). All 14 Choice jurisdictions were net importers of power in 1997 and had what the authors termed "full resource adequacy" in 2013. O'Connor and Diaz note that the "Five states of the industrial Upper Midwest offer a compelling intra-regional example of the success of Consumer Choice, with the competitive states Illinois and Ohio outperforming the Monopoly States of Indiana, Michigan, and Wisconsin with lower price trends and greater generation efficiency." (See Attachment EWH-3 at 2, 5).

²² Direct Testimony of Pablo A. Vegas at 12 (May 15, 2015); Direct Testimony of Kelly D. Pearce Testimony at 6-7 (May 15, 2015).

1 eleven OVEC units owned, in part, by AEP-Ohio.²³ In so doing, it ignores a
2 fundamental problem facing Ohio in the coming years: carbon regulation. On
3 August 3, 2015, the Environmental Protection Agency issued the Clean Power
4 Plan Final Rule, which issues emission guidelines for states to follow in
5 developing plans to reduce greenhouse gas emissions from existing fossil fuel-
6 fired electric generating units. Specifically, the EPA establishes the following in
7 the Clean Power Plan Final Rule: 1) CO₂ emission performance rates representing
8 the best system of emission reduction for two subcategories of existing fossil fuel-
9 fired EGUs – fossil fuel-fired electric utility steam generating units and stationary
10 combustion turbines; 2) state-specific CO₂ goals reflecting the CO₂ emission
11 performance rates; and 3) guidelines for the development, submittal and
12 implementation of state plans that establish emission standards or other measures
13 to implement the CO₂ emission performance rates, which may be accomplished
14 by meeting the state goals.²⁴

15 On the same day that the EPA issued the Clean Power Plan Final Rule, it also
16 issued a proposed Federal Plan for implementation of the Clean Power Plan.²⁵
17 EPA would implement the Federal Plan in any state that does not submit an
18 approvable plan.²⁶

²³ Id.
²⁴ See Clean Power Plan Final Rule – Regulatory Impact Analysis, available at
<http://www2.epa.gov/sites/production/files/2015-08/documents/cpp-final-rule-riap.pdf>.
²⁵ See Proposed Federal Plan and Proposed Model Rules, available at <http://www.epa.gov/airquality/cpp/federal-plan-and-model-rules.html>.

1 Since electricity generation in Ohio is heavily reliant upon coal generation, either
2 plan would likely lead to a redistribution of economic activity away from Ohio to
3 other states. What will make this redistribution especially painful is that what are
4 most vulnerable are the keystones of our most important industrial clusters in the
5 transportation industries—automotive, truck, aerospace, and locomotive—and our
6 paint and chemical industries. These all support long supply chains that stretch
7 across the state.

8 While some larger operations may pick up and leave, small and mid-sized
9 companies will lose business to out-of-state competitors and go out of business. It
10 is better for Ohio to develop a plan that responds to the EPA requirements, yet at
11 the same time protects jobs in this state.

12 Ohio may have already made one tool for compliance with the Clean Power Plan
13 unavailable through the process of freezing its energy efficiency and renewable
14 portfolio mandates. Ohio is currently in the process of re-evaluating those
15 mandates. Now is the worst possible time for ratepayers to subsidize inefficient,
16 old coal plants. Ohio's policymakers need to consider strategies for Ohio to
17 navigate both carbon emissions reduction and the aging coal-based power
18 generation in Ohio as part of a thorough, evidence-based strategy for the way to
19 react to the reality of proven large methane deposits in the Appalachian Basin,
20 impending carbon regulations, together with a review of the energy efficiency and
21 renewable portfolio mandates.

1 Q. What other problems do you see?

2 A. In general, bailing out old, failing legacy industries is counterproductive. We
3 should be very careful when we do so, and we should apply what has been learned
4 in other industry bailouts over the past several decades. There must be a clear
5 reason to expect that subsidies will turn around a company, not just revert to the
6 *status quo*.

7 AEP-Ohio's ratepayers already paid over \$150 million in subsidized electricity
8 costs for Ormet Corporation's plant in Hamlin, Ohio, only to have Ormet file for
9 bankruptcy. For the good of the regional economy, it is usually better to find a
10 humane and promising strategy for change than to prop up old, failing legacy
11 industries.

12 Q. But bailouts worked for the automobile and steel industries, did they not?

13 A. Yes, but the devil is in the details. We have to apply lessons learned in previous
14 publicly-supported industry restructuring.

15 There never should be a simple bailout; that is, a return to the *status quo* after
16 either providing an operating subsidy or in just restructuring debt. Subsidizing
17 operating costs will eventually fail, as it did in Ormet's case.

18 Cleveland's steel mills had to experience bankruptcy and reorganizations to get
19 their operating costs right.²⁷ Among the painful changes felt by one steel mill
20 were major rewriting of shop floor work rules and staffing levels, accompanied by
21 dumping pension obligations to the federal government, and changing wage

1 levels. All of this was after corporate bankruptcies. After the last bankruptcy, the
2 new owner of the steel mill invested heavily in new capital equipment and
3 processes improvements taking advantage of modern work rules and lower
4 operating costs, resulting in an extremely efficient operation.

5 Lessons from the bankruptcy of the domestically headquartered automotive
6 assembly industry are similar. The restructuring was national, and its initial costs
7 were borne by the national economy, not one state. Second, the companies were
8 allowed to shed their legacy assets, outdated and abandoned assembly and parts
9 plants, and to restructure their work rules, operating agreements, and labor costs.
10 And, in the case of two companies, there were corporate bankruptcies.
11 Whenever companies are bailed out without requiring major behavioral change,
12 an act of corporate lenient socialism has been committed. And, the most likely
13 outcome is the recreation of the failed business model that created the necessity
14 for bailout in the first place. This is what happened with Ornmet, this is what
15 happened to LTV's properties, this is the history of the Detroit-headquartered
16 automotive companies, and this is exactly what the Ohio utilities are asking for
17 now.

18 Specifically, AEP-Ohio is asking the PUCO to return to a business model for one
19 aspect of the business that not only previously failed, but to return to a model for
20 which Ohio ratepayers have already paid AEP-Ohio more than \$600 million to

²⁷ See "Steel in Cleveland," Plain Dealer archives at <http://blog.cleveland.com/odam/pubs/2009/03/07/GSTEEL.rdf>.

1 change.²⁸ Ohio ratepayers paid this fee as compensation for "stranded assets" that
2 AEP-Ohio incurred as a result of restructuring of the electric market. Those
3 stranded assets included generation facilities that were divested to an affiliate.
4 Now AEP-Ohio wants to put old wine into new bottles and incur the
5 inefficiencies of "cost plus" accounting for generation assets after previously
6 collecting \$600 million to change its behavior.

1 Q. Will throwing away the costs sunk into old generation disrupt Ohio's
2 economy by requiring investment into expensive new generation?
3 A. No. First of all, we cannot be certain that AEP-Ohio's affiliate, AEPGR, will
4 discard its generation assets by retiring the units. If either AEP-Ohio or AEPGR
5 believes, as claimed, that market prices will eventually rise above the costs set
6 forth in a power purchase arrangement, AEPGR will do what it can to keep these
7 plants operational, even if at reduced capacity.

8 It is important to note that I am not stating that power purchase agreements of this
9 nature should never be allowed, or that social issues can never be a consideration
10 for imposing riders or charges on distribution customers. For instance, power
11 purchase agreements can, in principle, be very useful in helping distributed
12 generation get off the ground in Ohio, as long as they are for a limited duration
13 and are treated as industrial-scale feasibility experiments. Distributed generation
14 promises to affect all aspects of electricity production and consumption:
15 generation, transmission, distribution, capacity, and environmental. So in some
16 cases it might make sense for ratepayers to fund a long-term arrangement in order
17 to finance distributed generation and test its purported efficiencies. However,
such projects are the opposite of what is proposed by AEP-Ohio.

²⁸ See, e.g., "Electricity: Ohio Restructuring Active," U.S. Energy Information Agency at 2 (September 2010) at <http://www.eia.doe.gov/electricity/neicis/teststrucinfo.html>; J.L. Wiggin-Ostrand, "A History of Deregulation, Senate Bill 3 and Current Situation," at 2-3 (November 14, 2007) at <http://www.oecd-ilibrary.org/services/testimony/2007-11-14.pdf> (noting that the generation portion of stranded costs were designed to permit the utility to recover its uneconomic investments in power plants); and Attachment EWH-1 at 29.

²⁹ See Testimony of Andrew Orr on Behalf of PJM Interconnection before the Ohio Energy Mandates Study Committee at 3-5 and Attachment at 3-7 (March 18, 2015) (Attachment EWH-4); see also PJM Interconnection, "2018/2019 RPM Base Residential Auction Results" at 8-10, 23-26 (August 21, 2015, updated August 28, 2015) (Attachment EWH-5).

- 1 Q: What are the relevant submarkets that exist in the generation and
2 consumption of electricity?
- 3 A: There wholesale energy markets for generation, capacity, and ancillary services.
4 These electrical generation components are competitively procured. The
5 transmission and distribution systems are regulated.
- 6 The discovery of extremely large deposits of methane, or natural gas, in Ohio,
7 West Virginia, Pennsylvania, New York, and the province of Ontario will lower
8 barriers to entry in the generation market and continue to disrupt existing models
9 for base load generation.
- 10 Additional technologies and practices should be encouraged to continue to
11 diversify the supply of electric generation capacity and regulatory barriers to their
12 entry should be removed. This is especially true for cogeneration, the entry of
13 power from outside the state of Ohio, and for alternative sources of power that
14 have proven to be cost competitive, such as solar.
- 15 At this point in time, the transmission and distribution of electric power is a
16 natural monopoly and should be regulated as such. However, in the future,
17 competition may be feasible in the transmission portion of the industry as
18 technologies change. Nonetheless, the distribution system will always be
19 operated by either a monopoly or a duopoly and will need to be regulated. The
20 distribution system can transform from a monopoly system to a duopoly when
21 natural gas utilities provide gas to households and commercial buildings that
22 contain fuel cells and then bring surplus power back into the distribution system.
- 1 However, fuel cells are not yet cost competitive for this particular market
2 disruption.
- 3 Professor Jean Tirole was awarded the Nobel Prize in economics for his work on
4 market power and regulation and has addressed the issues surrounding a
5 monopolized distribution network.³⁰ By analogy, his work demonstrates that
6 having competitive markets in the generation of electricity coupled with regulated
7 distribution networks is the optimal way to organize these markets. In other
8 words, treat them as separate markets and regulate the portion where market
9 power exists.
- 10 Restricting the purchase of power to a limited number of sources owned by one
11 company is antithetical to the competitive operation of the market. Locking out
12 other forms of generating capacity and new technologies will result in higher
13 costs to consumers.
- 14 Q: What are the implications for the case before us?
- 15 A: The AEP-Ohio Proposal will thwart the separation of these distinct product
16 markets and will result in the judgment of regulators being substituted for market
17 forces. This is after nearly 15 years of evidence that market forces work well in
18 the allocation of generating capacity and at a time when new sources of
19 generating capacity can enter the market.

³⁰ Tirole's work is summarized in the technical brief to the Nobel Prize committee: "Jean Tirole: Market Power and Regulation" (October 13, 2014) at http://www.nobelprize.org/nobel_prizes/economics/scientists/tirole/2014/advanced-economicsciences2014.pdf.

1 Expanding the definition of capacity is called for; removing barriers for
2 cogenerated power from entering the transmission system need to be lowered;
3 artificial barriers to accessing power generated outside of the state should be
4 removed; and industrial-scale feasibility experiments in carbon-free and lower
5 carbon sources of energy production should be encouraged.

6 The power market is heading toward a distributed system of generation with
7 sources of power coming from technologies that are currently being perfected.
8 The implication is that the distribution system will be critical to Ohio's energy
9 future because that future will be one of distributed generation tied into a smart
10 transmission grid.

11 Q: What is the implication for the generation companies and for public policy?

12 A: First, the future of the current electric distribution utilities lies in their
13 transmission and distribution systems, not in their legacy generation facilities.
14 Second, the financial implications of the future of legacy generation plants will
15 dominate the business strategies and behaviors of the electric distribution
16 companies, which will be to the detriment of the future of Ohio's economy. If
17 these companies are crippled financially by their legacy costs they will
18 aggressively use politics and regulation to defend their interests. They will
19 behave like a frightened dog that is backed into a corner.

20 The solution to this eventuality lies in broadening the scope of regulation and
21 changing the solution. We have to recognize that stranded electric generating
22 assets are not Ohio's problem, Pennsylvania's problem, or West Virginia's

1 problem. It is a regionally concentrated national problem brought on by changes
2 in technology and resource costs that have disrupted the traditional way that
3 electricity is generated in the United States. If the states that produce the power
4 try to resolve the legacy cost problem on their own, power costs will escalate in
5 ways that will be detrimental to their economic futures and resistance to the
6 resolution will delay its implementation.

7 Those who benefited are those who both produced and consumed the electricity.
8 To deal with the problem of production states, the footprint for the solution can be
9 best approximated by the territory of PJM. This is the territory of those who
10 benefited from both the production and consumption of power. (The same
11 argument can and should be made for the other interconnects.)

12 The orderly resolution of legacy power plants should rest with an organization
13 that acts in much the same way as a "bad bank" did in the resolution of the
14 savings and loan crisis, the financial meltdown associated with the Great
15 Recession, and the legacy costs of the Detroit-headquartered automobile assembly
16 companies. The assets should be transferred into the bad bank and the costs of the
17 resolution be borne by ratepayers across the entire footprint.

18 Q. As a major employer in central Ohio, should the health of AEP-Ohio, the
19 electric distribution utility, be a consideration in subsidizing these plants
20 through a power purchase agreement?

21 A. Possibly, but the electric distribution utility's health has not been raised as an
22 issue in these proceedings.

1 Q. Does AEP-Ohio's PPA Proposal satisfy the AEP-Ohio factors set forth by the
2 Commission?

3 A. No. The proposed PPA that requires AEP-Ohio to purchase all of the power from
4 nine uncompetitive generating plants owned by their affiliate, AEPGR, is not in
5 the public interest because the plants are not necessary to further economic
6 development in the region and will negatively affect manufacturers and
7 businesses that are important to the vitality of the region. Additionally, the
8 enactment of the PPA will most likely deter market entry by new and more cost-
9 efficient generators. The lack of entry is a much larger long-term economic threat
10 to power reliability and competitive pricing than is posed by denying the proposed
11 PPA.

12 The price paid to AEPGR will include the cost of fuel and any plant upgrades.³¹
13 It appears that AEP-Ohio's affiliate will also earn a return on the capital invested
14 as was true under the old regulatory regime.³² The output from the generating
15 units will be sold into the regional wholesale market. If it is sold at a loss (costs
16 exceed revenues), the loss will be passed on to all customers in AEP-Ohio's
17 service territory through the PPA Rider. If it is sold at a profit (revenues exceed
18 costs), that profit will be distributed to customers through the PPA Rider. One of
19 AEP-Ohio's projections demonstrates that there will be no profit through 2024,
20

1 charging customers approximately \$927 million for the first nine and a half years
2 of the PPA.³³

3 AEP-Ohio asserts that its Proposal preserves the competitive market because
4 customers are allowed to shop for their generation supply from alternative
5 suppliers (or other generators).³⁴ This assertion is incorrect and it is where AEP-
6 Ohio's regulatory protection appears. The PPA prevents a completely free market
7 from evolving.

8 Under the Proposal, if the plants covered by the PPA are operating at a loss (i.e.,
9 revenues received in the market are lower than the costs to operate the plants), the
10 loss or net costs to operate the plants will be allocated to all of AEP-Ohio's
11 customers, including those who chose to shop, thereby removing part, or all, of
12 the differential between AEP-Ohio's affiliate price and that of its competitors.
13 This dynamic will have two negative outcomes. First, it will deter new entrants to
14 the power generation market because the PPA will narrow their cost advantage.
15 Second, competitors will look at the PPA as a precedent, and as increasing
16 portions of AEPGR's generating capacity become uncompetitive, competitors
17 will expect continued efforts to place the uncompetitive generating assets under
18 the protection of the regulatory umbrella, which will turn the pricing disadvantage
19 into a negative feedback loop: the more uncompetitive the affiliated generating
20 capacity, the larger the fraction that falls under additional PPAs, the more
21 significant the assessment that is passed on to customers, and the narrower the

³¹ Direct Testimony of Kelly D. Pearce, Attachment Exhibit KDP-1 at 2-3 (May 15, 2015).

³² Id.

³³ Direct Testimony of Kelly D. Pearce, Attachment Exhibit KDP-2 at 1 (May 15, 2015).

³⁴ Direct Testimony of Steven M. Fetter at 10 (May 15, 2015).

1 pricing advantage new competitors will have. This set of expected events will
2 increase the perceived risk of investing in competitive generating assets, will deter
3 competing investment, and will lead to higher electricity costs for consumers than
4 would have occurred under a free market with no regulatory barriers to entry.
5 These are the impacts anticipated in the event that the Proposal is approved.

6 Q. Has AEP-Ohio demonstrated the financial need of the nine AEPGR
7 generating units or the OVEC generating units?

8 A. No. AEP-Ohio states that its forecasts indicate that the generating units are
9 potentially at risk.³⁵ When properly assessing a generation unit's financial
10 viability, the only costs that should be considered are avoidable costs. AEP-Ohio
11 has not argued that there has been any market failure; instead, AEP-Ohio merely
12 asserts that these generating units need subsidies in the near term in order to
13 remain competitive pending an anticipated rise in energy costs.

14 The assertion of price recovery in one to three years is puzzling for a number of
15 reasons. First, the price of fuel stocks has shifted greatly since the PPA was first
16 proposed—in ways that further disadvantage the power plants in question.
17 Second, the proven reserves of natural gas in the state of Ohio, in neighboring
18 Pennsylvania, and in West Virginia has grown over this time period, and the
19 infrastructure to deliver local sources of natural gas to markets has grown.
20 Finally, not only has the price of natural gas dropped over the intervening time
21 period nationwide, but prices reported out of the Dominion South Hub in West

³⁵ Direct Testimony of Kelly D. Pearce at 31 (May 15, 2015).

1 Virginia are below that in the Texas and Louisiana Hubs, including the Henry
2 Hub.³⁶

3 Q. From an economic standpoint, does it make sense to continue operating all of
4 the nine generation plants?
5 A. Not if the business continues to lose money as a business owner will not continue
6 investing cash into a business that is losing money. By extension, therefore,
7 ratepayers, who have no ownership interest in an electric generating company,
8 should not be expected or required to invest cash in a business that is losing
9 money, whether or not the business may be profitable in the future. In Ohio,
10 generation has been deregulated. It must compete with other generation in the
11 marketplace. AEP-Ohio is asking the Commission to award its affiliate a subsidy
12 to support its generation when this would be contrary to the express intent of the
13 Ohio General Assembly.³⁷

14 Q. Does promoting supply diversity necessitate that the nine AEPGR generating
15 units, and the OVEC generating units, remain in service?
16 A. The promotion of supply diversity does not require that the nine AEPGR plants
17 and the OVEC units remain in service. To be diverse means to be “of or relating
18 to different types.”³⁸ Ohio’s power supply mix will not be less diverse if the

³⁶ See Natural Gas Intelligence, http://www.naturalgasint.com/data/daten_products/dailyTreasure_id=south-louisiana&edition_id=SLAH.

³⁷ See generally, Chapter 4928, Revised Code; see also, Section 4928.02(F), Revised Code (“it is the policy of the state to (e)nsure effective competition in the provision of retail electric service by avoiding anticompetitive subsidies flowing from a noncompetitive retail electric service to a competitive retail electric service or to a product or service other than retail electric service, and vice versa, including by prohibiting the recovery of any generation-related costs through distribution or transmission rates”).

³⁸ Black’s Law Dictionary (Bryan A. Garner ed., 8th ed., West 1999).

1 plants are retired. Ohio and, in fact, AEP-Ohio's service territory will still be able
2 to be served by coal, nuclear, natural gas, renewable, and other generation sources
3 in the event that the plants do not remain in service. What is vitally important in
4 this case is having the PUCO both allow and encourage existing generators and
5 potential investors in new generating capacity to respond to market signals about
6 the fuels and technologies to be used. The PUCO should not inhibit potential
7 investors' response to these signals, especially for the extremely long time period
8 that is contained in this application.

9 Q. At this point, do you believe that the nine generating units, and the OVEC
10 generating units, are at risk of being retired *before it is economic to do so*?

11 A. No. The data presented indicate that continued operation of the plants is not
12 economic. If AEP-Ohio believes, as they have argued, that these plants will, in
13 the long run, be able to produce power at a cost that is below market, AEPGR will
14 not shut the plants down in the near term. AEP-Ohio should have no interest in
15 prematurely shutting down assets that are likely to prove valuable. Furthermore,
16 given AEPGR and AEP-Ohio's partial ownership in the generating plants, it is not
17 clear that AEP-Ohio or AEPGR will even be able to close the plants, at least not
18 unilaterally. If, on the other hand, AEP-Ohio believes that the plants will never
19 be competitive, they will shut them down, as they should.

20 Market logic dictates that if the price earned from the plants in question has a high
21 probability of recovering over the near term (a three-year period), AEP-Ohio
22 should be able to sell bonds or other long-term financial instruments to underwrite

1 the short-term losses in return for longer-term gains to investors. Avoiding a test
2 of this proposition by sophisticated investors and instead looking for relief by
3 having consumers assume the risk makes the argument presented suspect on its
4 face.

5 Q. Has AEP-Ohio soundly estimated the economic impact to electric rates if the
6 generation units included in the PPA are closed?

7 A. No. As I discuss previously, there is a direct correlation between higher electric
8 prices and manufacturer productivity. If the cost of electricity is increased
9 relative to costs in competing regions in order to fund the PPA Rider, then
10 manufacturing in Ohio will suffer.

11 Q. Has AEP-Ohio reasonably demonstrated the effect on economic development
12 in Ohio if the nine generation plants are closed?

13 A. No. AEP-Ohio's results do not properly capture the economic impact of closing
14 the plants in question, because they offer only a partial view of the economic
15 impacts. This is true for each plant threatened to be closed. Additionally, given
16 AEPGR's small ownership interest in several of the generating units,³⁹ it is highly
17 unlikely that AEP-Ohio or their affiliate will be able to cause the generating units
18 to close.

19 There are three significant problems with this type of analysis:

20 1. Direct Testimony of Kelly D. Pearce, Attachment Exhibit KDP-1 at 7 (May 15, 2015).

21 2. Market logic dictates that if the price earned from the plants in question has a high
22 probability of recovering over the near term (a three-year period), AEP-Ohio
should be able to sell bonds or other long-term financial instruments to underwrite

³⁹ Direct Testimony of Kelly D. Pearce, Attachment Exhibit KDP-1 at 7 (May 15, 2015).

1 (1) Geography. The impact analysis is restricted to the geographic region of the
2 generating plants in question. If the interest is just in these limited geographic
3 areas, the results are best depicted as community development impacts, not
4 economic development impacts. The Commission should consider the impact of
5 the suggested policy change on the economy of Ohio. This impact should include
6 not only the effect on those businesses and people who supply the power plant
7 with goods and services, but on those entities who ultimately purchase power from
8 the plant or who subsidize its operations. The impact on the state of Ohio should
9 use either the state's geography or the geography of the region affected by changes
10 in the price of power.

11 (2) Effects are Limited to the Supply Chain. AEP-Ohio only partially captures the
12 impacts of expenditures on the supply chain of the industry in question and on the
13 supply chains of the supplier industries, including households. An alternative
14 would be to construct a row-standardized input-output model of the economy. A
15 row-standardized model would be one that demonstrates the impact of changes in
16 the operation in question on the industries that use the product or the material
17 produced. These are the plant's customers. The impact on the supply chain is one
18 thing; the impact on the customers, however, is very different. With a commodity
19 such as electricity, the dominant economic impact will be on energy users.
20 Accordingly, you cannot know the true economic impact of closing the plants in
21 question until you understand the impact of price changes on power users.

22 (3) Substitution Effects. When prices increase or decrease, customers will shift
23 their patterns of purchasing. Think of a fixed coefficient input-output model as a

1 cake recipe. If you want two cakes, you double the recipe; if you want three cakes,
2 you triple the recipe, etc. But power usage is not like a recipe from Betty
3 Crocker's cookbook. Operators will change the mix of ingredients based on their
4 prices and, in the case of power, they shift regularly between generating plants and
5 investments and disinvestments based on the relative cost of the fuel. AEP-Ohio
6 did not capture substitution effects or the price sensitivity of the customers on the
7 plants in question.

8 AEP-Ohio's analysis is flawed. The geography is too narrowly drawn to
9 understand the economic impact on the state of Ohio. AEP-Ohio did not include
10 economic impacts on those who purchase the power or subsidize the plants'
11 operations. AEP-Ohio did not consider substitution effects. AEP-Ohio also
12 overestimated the impact of cutbacks in localized, or induced, spending. At best,
13 AEP-Ohio's analysis captures a partial view of the economic impact of the closing
14 of the power plants in question. I do not find the results to be definitive.

15 Q. Has AEP-Ohio reasonably demonstrated the effect on economic development
16 in Ohio if one or more OVEC generating units are closed?

17 A. No. Given AEP-Ohio's small ownership interest in the OVEC generating units, it
18 is highly unlikely that AEP-Ohio or their affiliate will be able to cause the OVEC
19 generating units to close due to their actions alone. Additionally, one of the OVEC
20 units is not even located in Ohio. The Commission has also held in the AEP-Ohio

- 1 case that sufficient evidence did not exist with regard to the OVEC units and
2 providing a PPA to AEP-Ohio to subsidize such plants.⁴⁰
- 3 Q. Has AEP-Ohio advanced an alternative plan to allocate the PPA Rider's
4 financial risk between AEP-Ohio and its ratepayers?
- 5 A. No, AEP-Ohio did not include an alternative plan to better allocate the risk
6 between it and its ratepayers.
- 7 Conclusion
- 8 Q. What is your overall recommendation for the PUCO with regard to AEP-
Ohio's PPA Proposal?
- 9 A. I recommend that the PUCO reject AEP-Ohio's request for a power purchase
agreement with its affiliate to subsidize AEPGR's aging, inefficient power plants.
- 10 Q. Does this conclude your testimony?
- 11 A. Yes, but, given the expedited schedule in this matter and lack of receipt of timely
discovery responses by AEP-Ohio, I reserve the right to supplement my testimony
as new information and data becomes available.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and accurate copy of the foregoing document was served on September 11, 2015 by electronic mail upon the persons listed below.

/s/Kimberly W. Boiko
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1325-001-636841

⁴⁰ See AEP-Ohio Order at 23, 25.

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in

Case No(s). 14-1693-EL-RDR, 14-1694-EL-AAM

Summary: Testimony (Direct) of Edward W. Hill on behalf of the Ohio Manufacturers' Association Energy Group electronically filed by Ms. Rebecca L. Hussey, on behalf of OMAEG

From the Columbus Business First

<http://www.bizjournals.com/columbus/blog/ohio-energy-inc/2015/11/dynegy-well-sue-to-stop-aep-and-firstenergy-power.html>

Dynegy: We'll sue to stop AEP and FirstEnergy power purchase deals

Nov 16, 2015, 11:43am EST



Gittings Photography
Dynegy Inc. CEO Bob Flexon



Tom Knox
Reporter- *Columbus Business First*

Dynegy Inc. would sue to stop power purchase agreements for Ohio electric utilities if state regulators approve the controversial proposals.

Executives from **FirstEnergy Corp.** and **American Electric Power Company Inc.** expect a decision by the first quarter of 2016, and are optimistic they'll reach a negotiated settlement on their plans.

If that happens, merchant generator Dynegy and its allies will fight to stop it.

See Also

[Dynegy not looking out for Ohio's interests, AEP Ohio president says](#)

[AEP plan should be rejected, PUCO staff report concludes](#)

[FirstEnergy shuts down power plant at site of Ohio's ethane cracker](#)

"It's so ridiculous it's even made it this far," Dynegy CEO Bob Flexon told me. "It's absurd that two investment-grade companies are running with their hands sticking out to the consumers and citizens of Ohio to pay them money that they don't need. It's the most absurd argument I've ever heard."

The plans would allow the utilities to buy electricity from their affiliated power plants via long-term contracts and sell it on the open power market. It would mark a return to regulation for that portion of power and a major shift under Ohio's deregulated power market.

Risk would shift to ratepayers instead of the companies and their investors. The utilities project customers would ultimately benefit, while opponents say the proposals would cost customers.

A settlement with the Public Utilities Commission of Ohio could mean contracts with shorter length. FirstEnergy wants 15 years, and AEP (NYSE:AEP) wants contracts for the life of its plants.

"Any competitive generator should challenge the results," Flexon said. "Even if they get one year, we'll challenge it."

(Click [here](#) to read the president of AEP Ohio's defense of the plan.)

Power plant operators including Houston-based Dynegy (NYSE:DYN) recently received more money from the organization in charge of the regional power grid. PJM Interconnection upped capacity payments to power providers to make sure they can run power when it's needed in response to problems during the extreme cold of the winter 2014 polar vortex. Power generators will be penalized more if they fail to deliver.

Flexon said the increase in payments is more proof that the utilities don't need what groups like the Sierra Club call "bailouts."

Dynegy is among the most vocal challengers to the plans. It entered the Ohio power market last year when it bought Duke Energy's (NYSE:DUK) Midwestern power plants. It sees the plans as an unfair advantage for the state's utilities, while AEP says it's a necessary hedge to combat volatile energy prices.

Still, there's probably some truth to the likelihood of some type of settlement for FirstEnergy (NYSE:FE) and AEP's plans, Flexon said.

"We have two sitting CEOs saying 'We're going to get this,' " Flexon said of AEP's Nick Akins and FirstEnergy's Chuck Jones. "I can't imagine they're making that up."

Honda North America – North American Logistics

Marysville, OH CNG Project Overview

November 19, 2015

Kevin Wade

Compressed Natural Gas project

HONDA

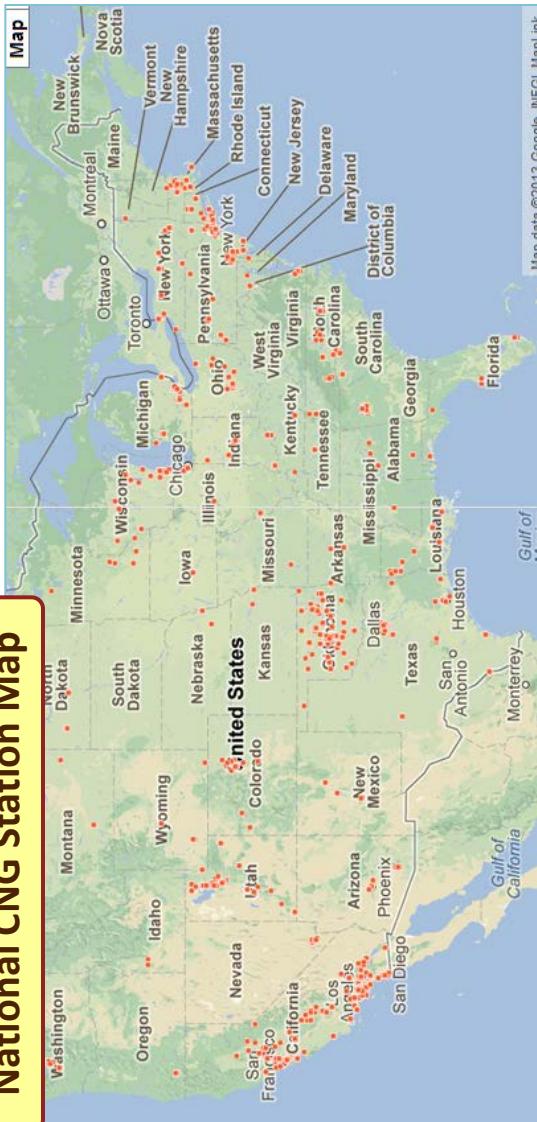
Origins of Project

- Honda has long heritage of environmental stewardship
- Company's global commitment is to be an environmental leader—both in products and in manufacturing facilities
- For production facilities, Honda has a “Green Factories” initiative
 - environmental management
 - energy and resource conservation
 - zero emission initiatives
- Minimizing CO₂ emissions is top priority for Honda worldwide

Proposed CNG project supports reduction of emissions related to parts deliveries

Transportation Use of CNG

National CNG Station Map



Ohio CNG Station Map



Currently Using/ Investigating Compressed Natural Gas

- American Honda
- Frito Lay
- Smith Dairy
- P&G
- Subaru
- Waste Management
- Fed Ex / UPS
- Coca-Cola
- COTA
- City of Dublin

- Natural Gas network is growing, but not yet well established
- Major companies are investing in station development
 - Many have implemented their own fueling stations
 - Many own/operate their own truck fleets
 - “Return to Base” model prevalent

Regional CNG Projects

Dublin, OH

- City of Dublin adds 44 CNG vehicles to fleet

City of Dublin Adds 44 New CNG Vehicles to Fleet	
January 09, 2012	Print
Twitter	Share
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	<p>DUBLIN, OH – The City of Dublin's Division of Fleet Management recently added 44 new vehicles to the City Fleet. Each vehicle has been converted to dedicated compressed natural gas (CNG) powered vehicles, according to a release from the City.</p> <p>The vehicles and conversions were funded in part by a U.S. Department of Energy grant administered through Clean Fuels Ohio. This same grant also will assist in the construction of a public CNG fueling station, which is slated to open in spring 2012. The City also will receive \$75,000 from GS Energy, which will provide natural gas to the CNG fueling facility.</p> <p>"We are committed to providing the highest quality of service to our residents and business community today while continuing to plan for tomorrow's generation as a green and sustainable community," said Barry Syler, fleet manager. "The City also is looking forward to alternative energy sources that reduce emissions, rely on domestic sources, and reduce energy costs to the City. With these 44 vehicles alone, the City anticipates saving at least \$30,000 per year in fuel costs, as well as significant reductions in emissions."</p> <p>The 44 new vehicles are:</p> <ul style="list-style-type: none">• 41-2011 Ford pickup trucks• 1-2011 Ford Transit• 2-2011 Ford Fusions <p>As part of the conversion, the City's fleet technicians have been certified to repair these CNG vehicles as well as complete any required warranty work. Atech-Eco Corp. of Ashtabula, N.C., completed the technician certification training. Atech-Eco completed more than 35 of the vehicle conversions, and the remainder was completed by the City fleet technicians, the release stated.</p> <p>Page 89 of 138</p> <p>Fleet management is an ACE Blue Seal shop with six ASE Master Certified Technicians.</p> <p>Syler who is an advisory board member for Government Fleet magazine, was appointed as fleet manager for the City of Dublin in September 2011. Previously, he was fleet maintenance manager for the City of Little Rock, Ark.</p>

Central Ohio Transit Authority

- Opened CNG station in June 2012

- "The City also is looking forward to alternative energy sources that **reduce emissions**, rely on domestic sources, and **reduce energy costs** to the City. With these 44 vehicles alone, the City anticipates saving at least \$30,000 per year in fuel costs, as well as significant reductions in emissions."

- Central Ohio Transit Authority (COTA)
adds CNG buses to fleet

- May 2013 Kick-off and CNG station implementation

- According to Brian Hoyt, of COTA, “Compressed natural gas burns cleaner. It’s a more efficient fuel, it has a cleaner exhaust, and costs less than diesel.”

Kalmbach Feeds

- Held ribbon cutting 11/20/13 for new CNG refueling station in Upper Sandusky – at US 23 and US 30.

nbc4i.com
Search for you.

New 'Green' COTA Buses Are Quieter, Cleaner
By David Maza, Meteorologist, Reporter - email

MONEY-SAVING BUSES
NORTH HIGH STREET, COLUMBUS

COLUMBUS, Ohio - Quiet is not usually one of the words people downtown would associate with a bus.

But the Central Ohio Transit Authority (COTA), is changing that thinking with a new fleet of cleaner, quieter buses.

The decreased engine noise is nice, but there are a lot of other benefits if the new bus has as well.

The new, green member of the COTA's fleet is here - it's CNG, or compressed natural gas buses. The buses have much like standard diesel buses with different fuel, and they are the future of the COTA fleet.

According to Brian Roy with COTA, "Compressed natural gas burns cleaner, it's a more efficient fuel, and it has a cleaner exhaust, and the fact that it costs about one-fourth the cost of diesel fuel, it just seemed like it was the right way to go."

With gas costs ever increasing, COTA spent \$3 million on fuel last year. That 75 percent savings a CNG bus provides could equal a drop of almost \$7 million a year with a full CNG fleet.

Roy also said that the buses will also not leave that diesel smell.

The less offensive scent and noise are not only major benefits for the rider, but also for the community and the environment as well.

In fact, the riders who spoke to NBC4 Monday seemed to enjoy the new buses.

"It's pretty much the same, you know, it rides a little smoother, it's not so loud," said Mychelle Williams.

"It's great, it's great for the environment, it's great for the riders, it's convenient, it's convenient for everybody, the taxpayers, the customers," said Diana Hess.

The new CNG bus costs about \$70,000, or about \$39,000 more than the standard diesel bus. But that new CNG bus is offset with a federal clean fuels grant.

There have been added costs with the new buses. The upgrades to the Hockley Avenue facility for refueling of the buses, COTA plans to continue to roll out the buses at a rate of about 30 per year, as the older buses are ready to retire.

The roll-out will last about 12 years, at which point the whole fleet will be CNG.

...the U.S. will always be a world leader in science and technology.

CNG Station Announcement

HNA MAL

2014 Carrier Meeting

HONDA
The Power of Dreams

Honda Racing 1-HD-2-X

HONDA
HONDA
POWER
Equipment

HONDA
HONDA
MARINE

ACURA

HondaJet

News & Views

News Releases →

Honda To Install Compressed Natural Gas Fueling Station Near Marysville Auto Plant

Site Will Be First Public CNG Fueling Station Located on Honda Property

3/11/2014 12:38:00 PM

Honda To Install Compressed Natural Gas Fueling Station Near Marysville Auto Plant

Site Will Be First Public CNG Fueling Station Located on Honda Property

3/11/2014 12:38:30 PM

As part of its effort to reduce its global CO₂ emissions and minimize the environmental impact of its operations, Honda U.S. America, Inc. (HUSA) will be installing a compressed natural gas (CNG) fueling station on its Marysville Auto Plant property in Marysville, Ohio.

The CNG station, which will be designed, constructed and operated by Trillium CNG, will be the first public CNG station located on a Honda property in North America. The full automated station will feature three Class 8 dispensers for over-the-road carriers and a separate dispenser for passenger and light-duty vehicles.

"We applaud Honda's global commitment to environmental stewardship and are proud to be their partner on this landmark project," said Gary Boettcher, president of Trillium CNG. "Ohio remains a key state in our infrastructure development plans due to its proximity to several major interstates and shipping lanes. Trillium CNG will be operating 52 public access CNG stations nationally by mid-summer throughout the U.S."

The CNG station, which will be located on Honda property at the interchange of Route 33 and Route 79, is intended to provide to those that have already adopted the use of CNG as a fuel, as well as to encourage supplier and logistical partners to adopt and expand its use.

"A major benefit to our carriers and suppliers adopting the use of CNG as a fuel is the lack of convenient fueling stations close to Honda facilities," said Jim Wehrman, HAM senior vice president. "By providing an accessible fueling option, we hope that our logistical partners will more closely consider the benefits of using CNG. Minimizing our environmental footprint is a vital part of Honda's business strategy and operating philosophy, and we would like to thank our neighbors in Alan Township and the Logan-Union-Champaign Regional Planning Committee for their help in furthering this project."



Honda To Install Compressed Natural Gas Fueling Station Near Marysville Auto Plant

- 3/11/2014

- "**A major barrier to our carriers** and suppliers adopting the use of CNG as a fuel **is the lack of convenient fueling stations** close to Honda facilities," **said Jim Wehrman, HAM senior vice president.** "By providing an accessible fueling option, **we hope that our logistical partners will more closely consider the benefits of using CNG.** Minimizing our environmental footprint is a vital part of Honda's business strategy and operating philosophy

CNG Partner Study

Core Requirements

- Station must operate 24/7, with quick response to concerns
- Honda will provide gas/electric if on HAM property
- Station will cater primarily to trucks, but also be open to public

Options

Opt	Own	Operate	Land/ Utilities
1	Honda	Honda	Honda
2	Honda	3 rd Party	Honda
3	3 rd Party	3 rd Party	Honda
4		Carrier / 3 rd Party	

Vendor Selection

Opt	Own	Operate	Land/ Utilities
3	3 rd Party	3 rd Party	Honda

- Preliminary vendor reviews
 - 20 companies
 - Company background, capabilities, etc...
- Detailed vendor proposals
 - 6 companies
 - In depth proposal analysis, negotiations, etc...

Trillium CNG selected

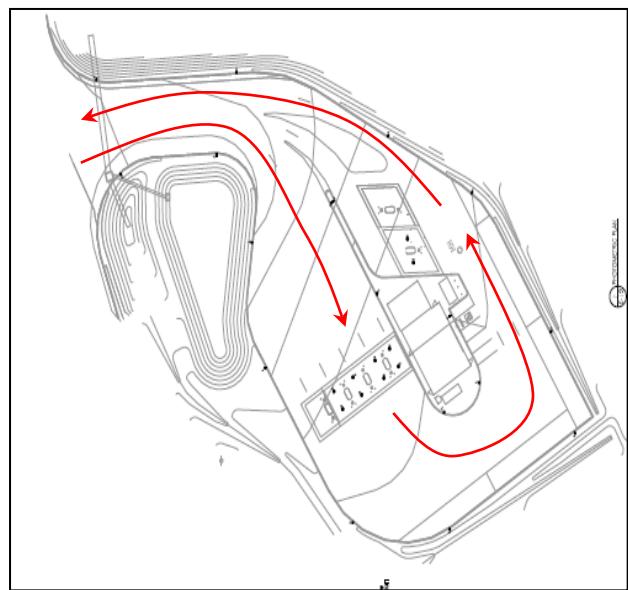
CNG Station Overview

Intersection Changes

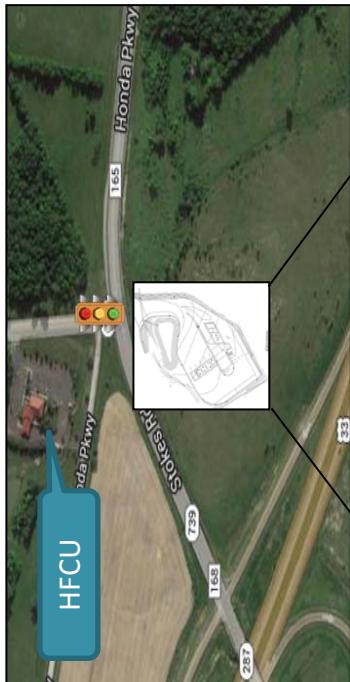


- Modify existing 3-way signal to 4-way signal
- Change Honda Pkwy westbound lane to a left turn lane

Traffic Flow



- CNG use only
- Open to public customers
- Restrooms/ vending
 - No retail shop
 - Temporary truck parking



CNG Station Photos – July 27, 2015

Enter



CNG Station Opening Event – Aug 19, 2015

HNA- NAL

Honda Opens Compressed Natural Gas Fueling Station On Marysville Campus

August 19, 2015 –



- Multiple Honda carriers have implemented CNG tractors
 - More than 50 CNG units filling daily (M-F)
 - Average > 4,000 GGE / day (M-F)

Environmental Impact

A 'NATURAL' SOLUTION FOR MORE EFFICIENT SHIPPING

How Honda's new CNG fueling station will help reduce carbon dioxide emissions by millions of pounds per year.



Honda is opening a Compressed Natural Gas (CNG) refueling station at its Honda of America Manufacturing facility in Marysville, OH. The station is part of Honda's initiative toward reducing CO₂ emissions. Honda is encouraging the use of CNG-powered vehicles by its suppliers and logistics companies.



+100 Diesel



There are more than 100 suppliers in the region that could utilize the CNG station.



20M ↗



That would be approximately 20,000,000 CNG-powered miles per year/year.

+3500 Diesel



Honda is estimating the potential for more than 3,500 deliveries per week to be CNG powered.



Compressed Natural Gas



$$\begin{aligned} &\times 20,000,000 \text{ miles} \\ &= 57.9 \text{ million pounds of carbon every year} \end{aligned}$$

This conversion from diesel to CNG...

...would avoid nearly **20 Million**

That's the equivalent of adding 7,400 acres of forest to the U.S. every year

• Environmental Impact Estimate

- Jul-Oct
- Total GGE sold > 275K
- Lbs of carbon emissions avoided > 1.3M
- Full Year Estimate
- Total GGE sold > 1M
- Lbs of carbon emissions avoided > 5M

Regional Development Opportunities from Appalachian Basin Shale

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The Urban Center, Levin College,
Cleveland State University

November 19, 2015
OMA, Columbus

Five Year Most Likely Drilling Rate Estimate

Year	Rig Count	Drill Time	Wells/Year	Total Wells
2011-2013				364
2014	45	28.4	593	957
2015	48	25	701	1658
2016	51	22	846	2504
2017	53	22	879	3383
2018	53	22	879	4262
2019	53	22	879	5141

Throughput Projections

2014 Throughput Projections

	Low	Most Likely	High
Natural Gas (bcf/d)	1.23	1.23	1.23
NG Liquids (bcf/d)	0.62	0.62	0.62
Ethane (mbbl/d) (1)	42.4	42.4	42.4

(1) Assuming 20% ethane rejection

2019 Throughput Projections

	Low	Most Likely	High
Natural Gas (bcf/d)	3.67	4.75	5.30
NG Liquids (bcf/d)	1.84	2.36	2.65
Ethane (mbbl/d) (1)	126.4	161.6	181.6

(1) Assuming 20% ethane rejection

Public Data Compared to Industry Projections

Ohio Portion of Utica Shale -- 2020

	Total Throughput (BCF/D)	Wet Gas Throughput (BCF/D)	Ethane Throughput (Mlbbl/day) (4)
Study Projections(1)	4.75	2.36	161.6
Industry Projections	8.1 (2)	3.6 (3)	247.2

- (1) "Most Likely Scenario"
- (2) Tudor, Pickering & Holt Projection, Fall 2014
- (3) Blue Racer Projection, Fall 2014
- (4) Assumes 6 gal/mcf liquids, 60% ethane and 42 gal/bbl, and 20% ethane rejection

Cryogenic Processing, Fractionation, and De-Ethanization Facilities in the Utica Region June 2015

De-Ethanization

■ Markwest

Fractionation

▲ Blueracer

▼ Markwest

▲ Utica East Ohio

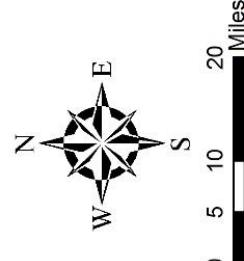
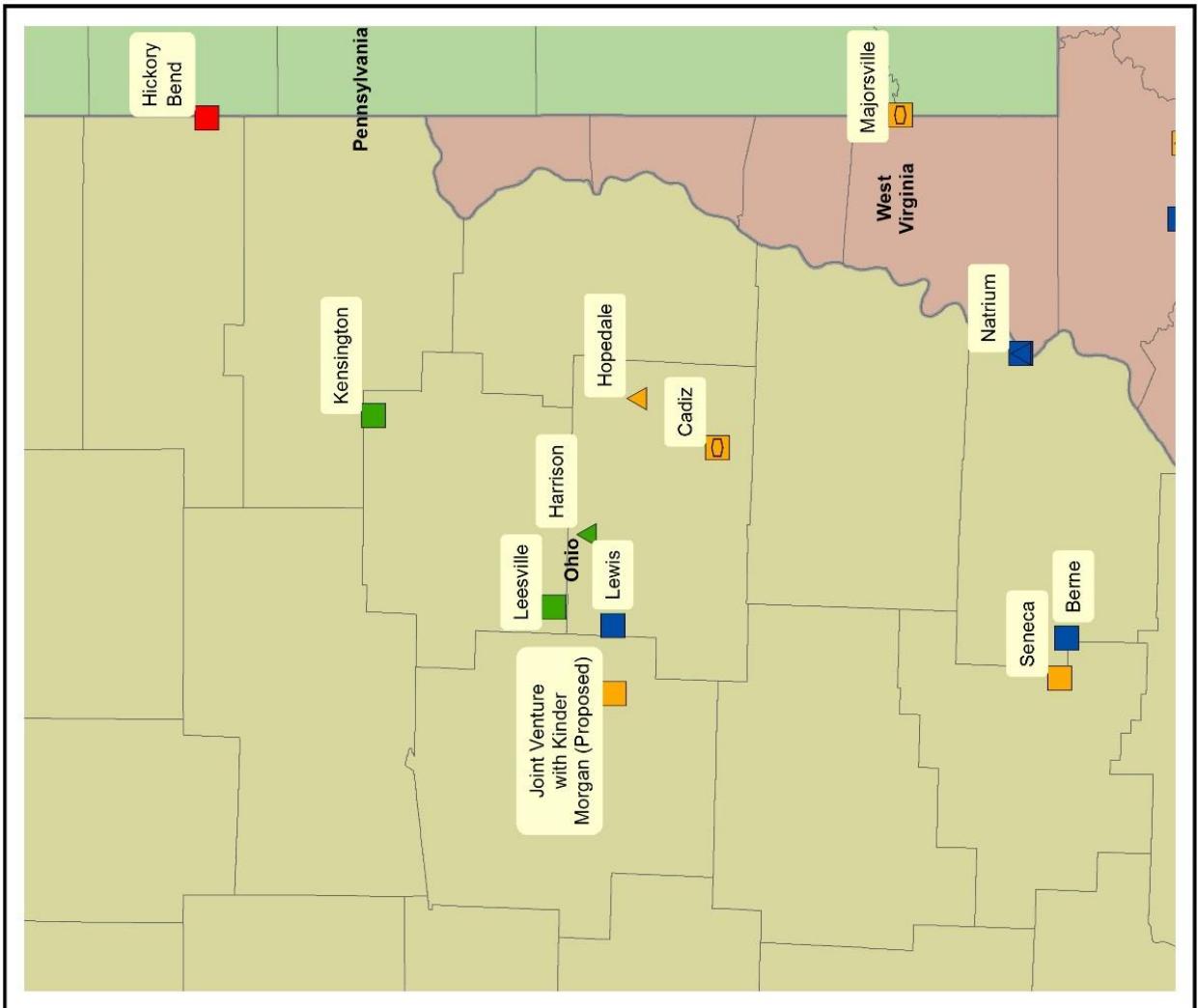
Cryogenic Processing

■ Blueracer

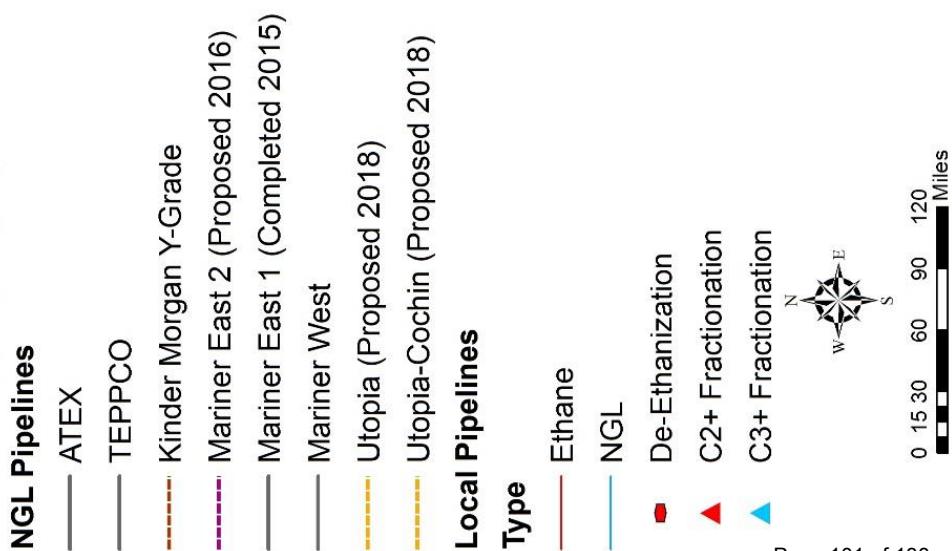
■ Markwest

■ Pennant

▲ Utica East Ohio



Proposed and Existing NGL Pipelines in the Utica and Marcellus Regions June 2015



Utica and Marcellus Projected Production Compared to Fractionation And Take Away Capacity, 2020

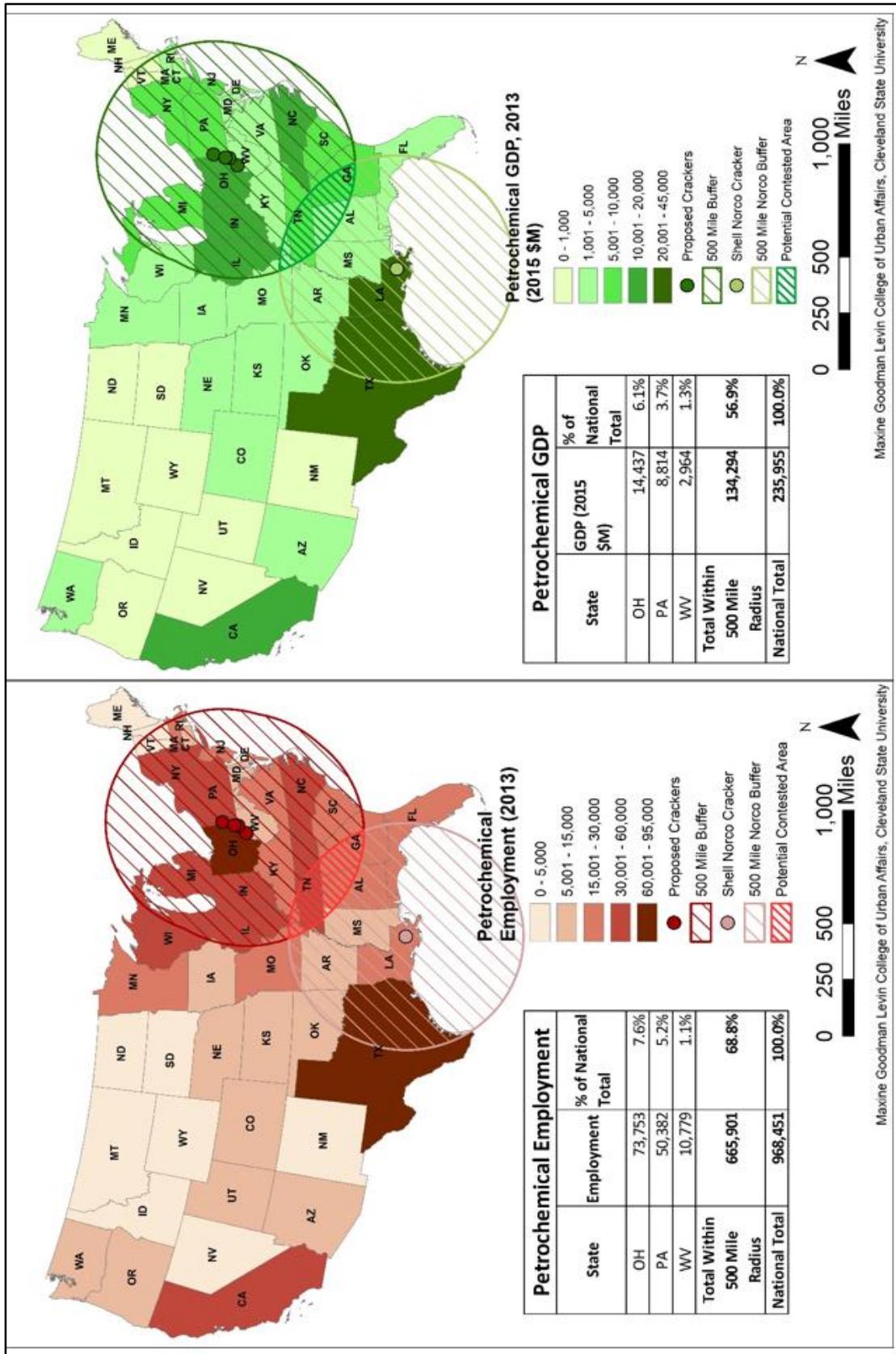
	Total NGL Volume	Ethane (mbbl/d)
Industry Projected Production – wet gas	9.3 bcf/d (3.6 Utica + 5.7 Marcellus) (1)	638.4 (2)
Industry Projected Processing Capacity	12 bcf/d	371 (3)
Industry Projected NGL Take Away Capacity, plus local use	1,525 mbbl/d	460 (4)

- (1) Blue Racer Investor Presentation – Fall 2014; Williams projects 1,400 mbbl/d
- (2) Assumes 60% ethane, 6 gal/mcf, 42 gal/bbl, and 20% ethane rejection
- (3) One third of C2+ fractionation (87 mbbl/d) plus de-ethanization (C2) (284 mbbl/d)
- (4) The Mariner East 1 and Utopia pipelines are dedicated to ethane and propane, with capacities of 70 and 75 mbbl/d, respectively. The Mariner East 2 pipeline expansion is projected to be 275 mbbl/d, however most of this pipeline's capacity is anticipated to be used for propane. Accordingly, all 145 mbbl/d of the propane/ethane capacity is used to make this number, but none of the 275 mbbl/d. The range of possible ethane capacity is between 315 and 735 mbbl/d.

Proposed Regional Crackers

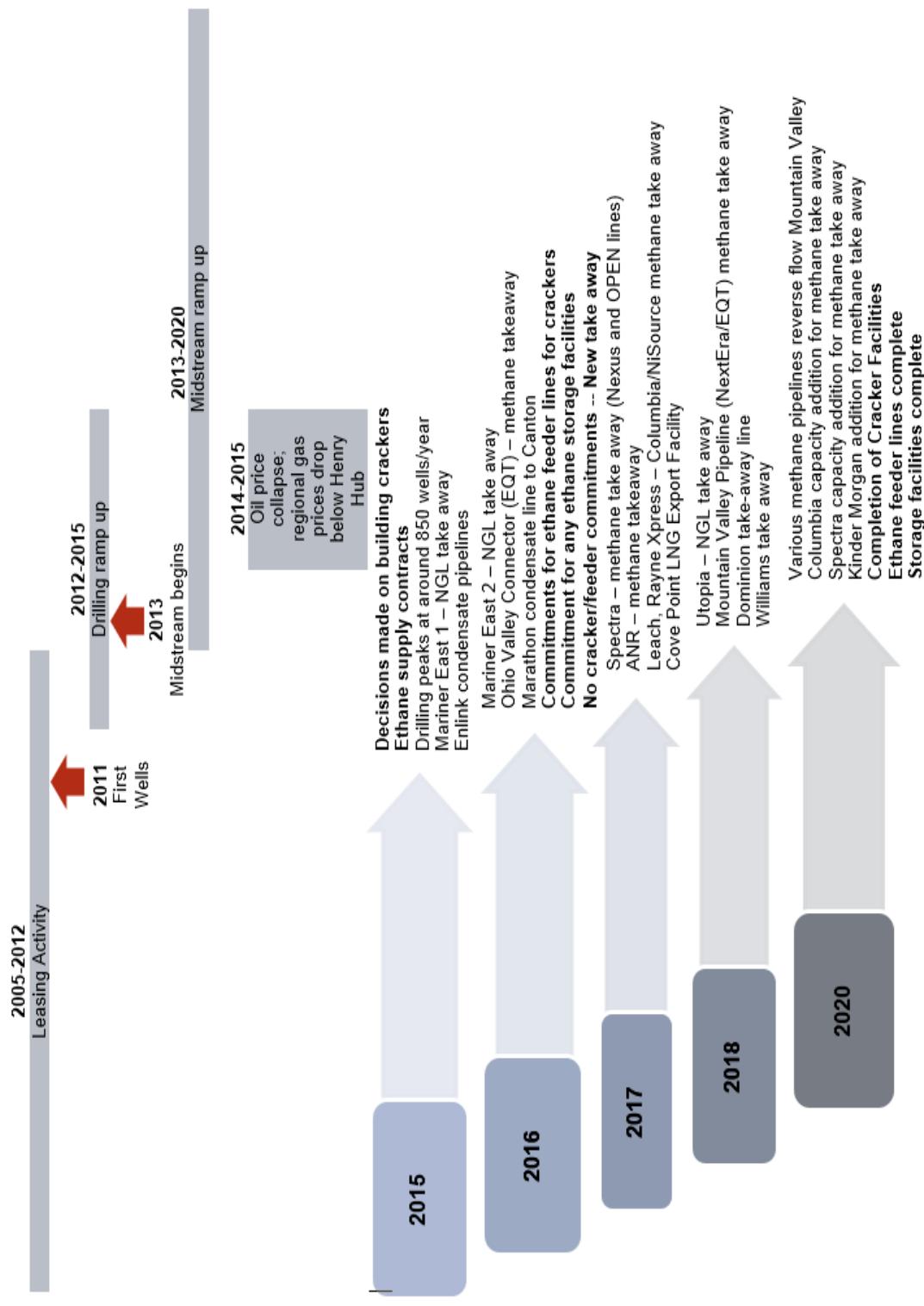
- Shell Chemical LP
 - \$3+ billion, Monaca (Beaver County, PA)
 - 105 mbbbl/d of ethane
 - 10,000 construction jobs and 400 permanent operational jobs
- Braskem/Odebrecht (Brazil)
 - \$5 billion, 363-acre property near Parkersburg, (Wood County, WV)
 - 60 mbbbl/d of ethane
 - 325 permanent operational jobs
- PTT Global (Thailand), and Marubeni Corp. (Japan)
 - \$5.7 billion, Belmont County, Ohio
 - 35-40 mbbbl/d of ethane
 - \$150 mm committed
- **Total Ethane Requirement: 205 mbbbl/d**
 - **2020 industry projected ethane production: 638 mbbbl/d**
 - **Estimated 2020 takeaway capacity shortfall: 178 mbbbl/d**

GRP and Employment of CC Companies within 500 mile radius



Main Nodes of Development and Critical Investment Decisions

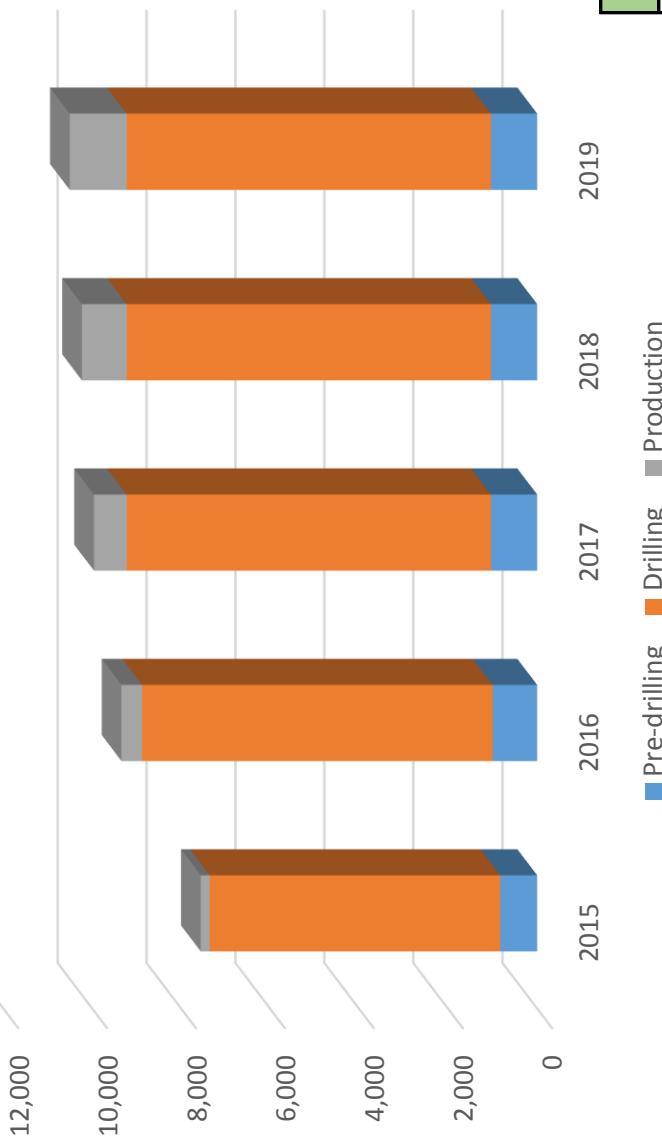
Oil and Gas Development Timeline – Utica



Required Workforce Projections

- In 2015, the projected upstream operations will generate another 7,260 supply-type jobs
- Main Ohio employment in support industries will be in
 - architectural and engineering;
 - wholesale trade;
 - management;
 - legal services;
 - trucking
- Ohio is missing
 - service unit operators – Oil, Gas and Mining;
 - roustabouts – oil and gas;
 - heavy and tractor-trailer truck drivers;
 - First-line supervisors of construction trades and extraction workers;
 - Derrick operators, oil and gas

Direct Upstream Workforce Demand



	Total	Cumulative
2015	7,558	7,558
2016	9,138	9,342
2017	9,495	9,961
2018	9,495	10,233
2019	9,495	10,505

- Additional \$4.7 billion of investment will be made over the next 5 years in interstate pipelines (segments in Ohio)
- We distributed it equally over the next 5 years
- Midstream construction projects might require 5,000 FTE construction jobs

The Customers for the Petrochemical Industry in the Tri-State Region

- NAICS 32511 – Petrochemical manufacturing
- NAICS 325212 – Synthetic rubber manufacturing
- NAICS 32519 – Other basic organic chemical manufacturing
- NAICS 325211 – Plastics material and resin manufacturing
- NAICS 324199 – All other petroleum and coal products manufacturing
- NAICS 326160 – Plastics bottle manufacturing
- NAICS 32611 – Plastics packaging materials and unlaminated film and sheet manufacturing
- NAICS 326122 – Plastics pipe and pipe fitting manufacturing
- Ohio can use existing manufacturing strengths to capitalize on midstream and downstream supply chain opportunities
- Robust regional plastics and rubber industries create an attractive market for midstream and downstream developers in Ohio
- Opportunities exist to grow the supply base in Ohio across various stages of oil and gas development
- Geography offers Ohio a transportation cost advantage in providing shale products to local and regional markets

<p>Cleveland State University Maxine Goodman Levin College of Urban Affairs</p> <hr/> <p>Prepared for: The Economic Growth Foundation RECS Shale Committee JobsOhio</p> <p>MAPPING THE OPPORTUNITIES FOR SHALE DEVELOPMENT IN OHIO</p> <hr/>	<p>ECONOMICS OF UTICA SHALE IN OHIO: SUPPLY CHAIN ANALYSIS</p> <hr/> <p>Prepared for: The Economic Growth Foundation JobsOhio</p> <p>September 2015</p> <hr/>	<p>ECONOMICS OF UTICA SHALE IN OHIO: WORKFORCE ANALYSIS</p> <hr/> <p>Prepared for: The Economic Growth Foundation JobsOhio</p> <p>September 2015</p> <hr/>	<p>ECONOMICS OF UTICA SHALE IN OHIO: Center for Economic Development</p> <hr/> <p>Energy Policy Center</p> <p>September 2015</p> <hr/>	<p>ECONOMICS OF UTICA SHALE IN OHIO: Energy Policy Center</p> <hr/> <p>September 2015</p> <hr/>
<p>2121 Euclid Avenue Cleveland, Ohio 44115</p>	<p>2121 Euclid Avenue Cleveland, Ohio 44115</p>	<p>2121 Euclid Avenue Cleveland, Ohio 44115</p>	<p>2121 Euclid Avenue Cleveland, Ohio 44115</p>	<p>2121 Euclid Avenue Cleveland, Ohio 44115</p>

Full RECS Shale Reports can be found at:
<https://www.csuohio.edu/urban/research/shale-reports>

AGENDA

Ohio lateral pipeline stakeholder roundtable
October 26, 2015

1. Welcome & introductions
2. Overview of goals
3. Relationships between LDC's and manufacturers
 - a. How are working relationships between gas companies and manufacturers?
 - b. Do all of the relevant individuals (energy managers and LDC large customer relations staff) know each other and have good communications?
 - c. Are there ways to improve interaction that would lead to an increase in natural gas utilization?
 - d. Is there a regular review of capacity and pressure availability/limitations that is made available to the manufacturer?
 - e. Is there a routine discussion regarding the options and associated cost to overcome any limitations.
 - f. Is this kind of communication going on routinely?
 - g. What are some ways that might improve dialogue between LDC's and manufacturers? Conferences, roundtable discussions, one-on-one meetings etc.?
4. Financial
 - a. What are the major financial barriers for manufacturers wanting to access gas?
 - i. Accessing funds?
 - ii. Not wanting to have debt on their books?
 - iii. Inability to justify that much debt, not enough time to pay down the debt, government policies?
 - b. What are the main financial concerns of LDC's when looking at lateral line projects?
 - i. Project needs to be paid for up front or in short term?
 - c. What are potential ways to help improve the process of financing lateral pipelines?
 - i. Changes in government policies?
 - ii. Longer term financing programs?
5. Policies and regulations
 - a. Are there changes in the law or regulatory policies that would make development easier?
 - i. Financing
 - ii. Construction
 - iii. Regulation

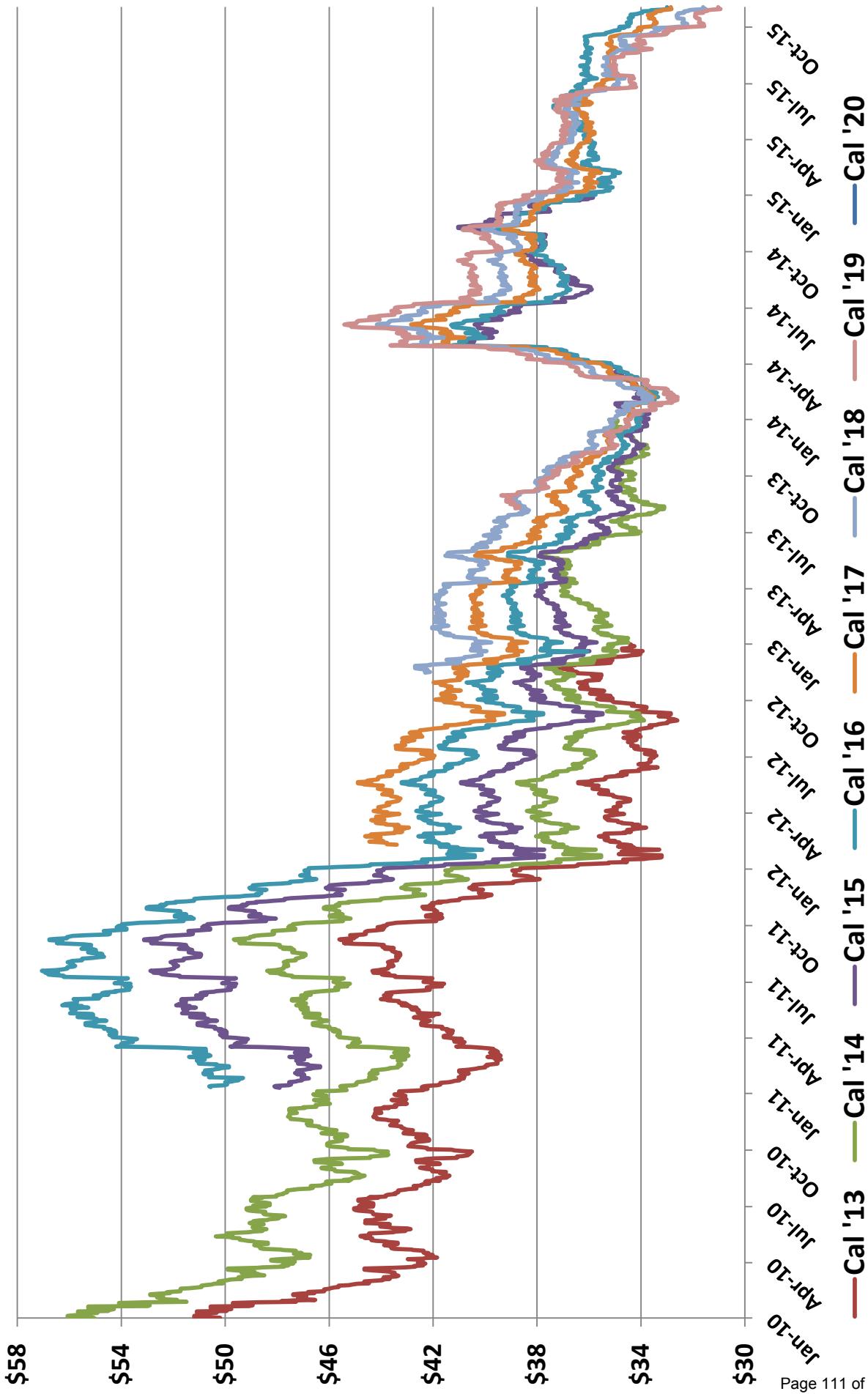


Summer 2015 RTO Coincident Peaks (5CP)

Note: All times are listed in Hour Ending EPT

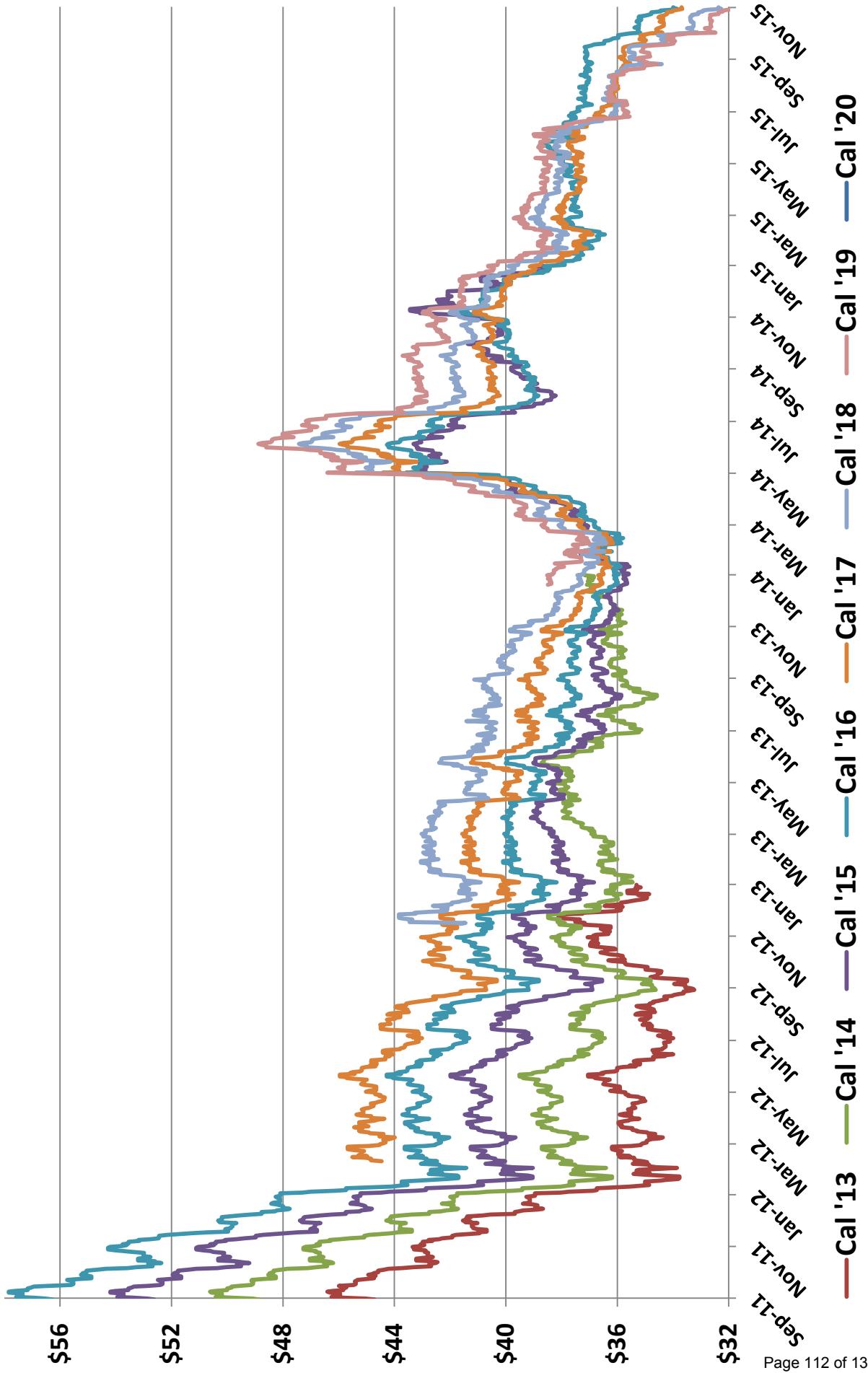
PJM RTO			
Day	Date	Hour	MW
Tuesday	7/28/2015	17:00	143,496
Monday	7/20/2015	17:00	142,897
Wednesday	7/29/2015	17:00	142,291
Thursday	9/3/2015	17:00	141,228
Monday	8/17/2015	15:00	139,468

Historical Pricing PJM AEP. Around the Clock

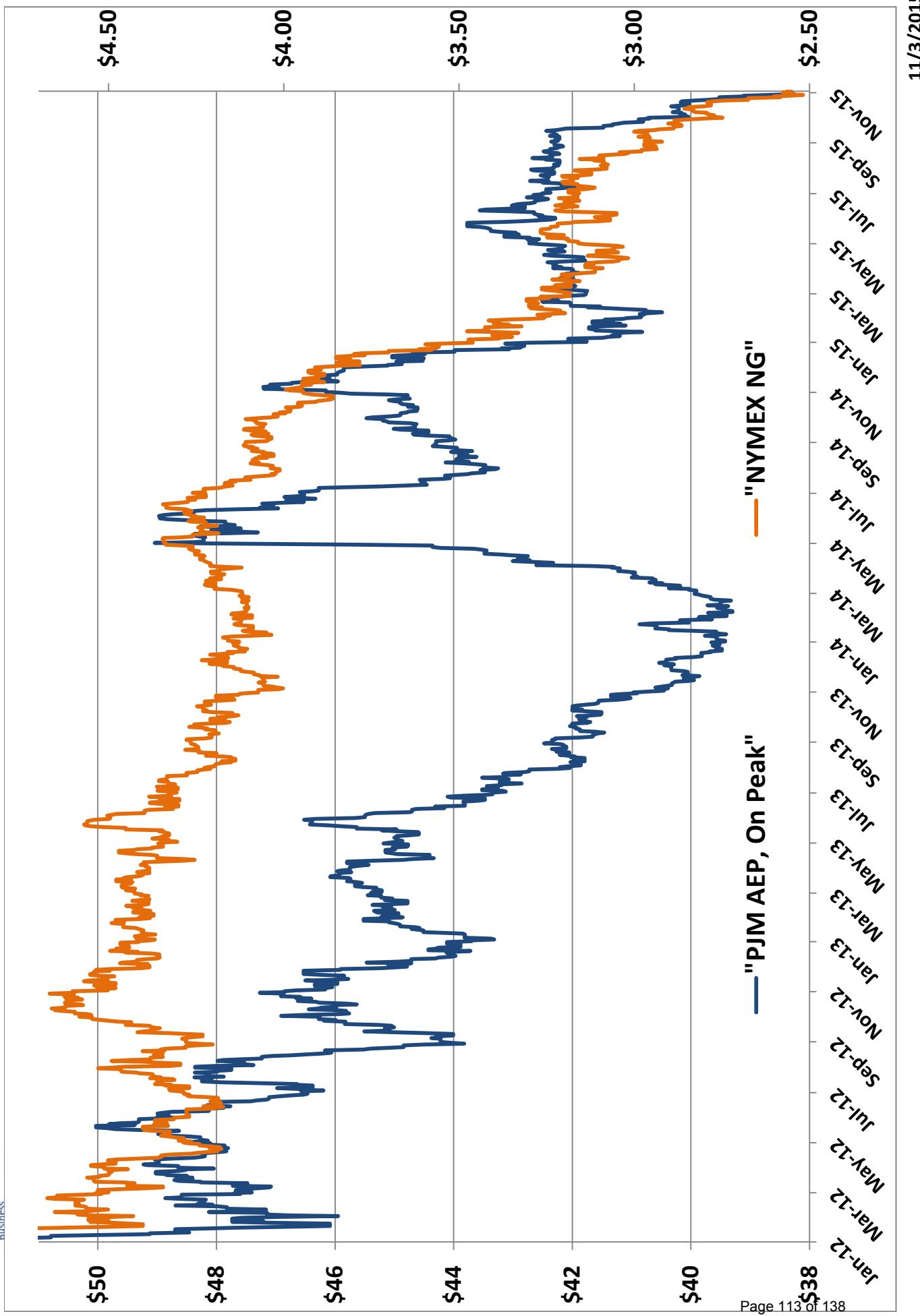


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Historical Pricing PJM ATSI. Around the Clock



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PRICE TREND ANALYSIS

Transaction Point:	PJM AEP ATC					
Data Range	1/10/2011	1/10/2011	1/10/2011	1/11/2011	1/11/2011	1/9/2012
From:	11/2/2015	11/2/2015	11/2/2015	11/2/2015	11/2/2015	11/2/2015
To:						
	Q1 - 16	Q2 - 16	Q3 - 16	Q4 - 16	2016	2017
Current Price	\$36.29	\$31.96	\$32.83	\$30.90	\$32.99	\$32.85
Current Percentile	4.4%	4.4%	0.0%	3.6%	0.0%	0.0%
Minimum Price	\$35.13	\$29.26	\$32.69	\$30.02	\$32.85	\$31.51
Date of Minimum	12/18/13	2/8/14	10/30/15	2/13/14	10/30/15	10/30/15
Maximum Price	\$59.60	\$54.57	\$59.95	\$54.65	\$57.06	\$44.89
Date of Maximum	7/19/11	9/8/11	7/19/11	9/7/11	7/19/11	5/19/12
25th Percentile	\$39.50	\$33.74	\$36.73	\$32.99	\$36.13	\$36.00
50th Percentile	\$42.93	\$36.22	\$40.31	\$35.57	\$38.45	\$38.04
75th Percentile	\$46.55	\$40.24	\$44.44	\$40.03	\$42.03	\$40.56

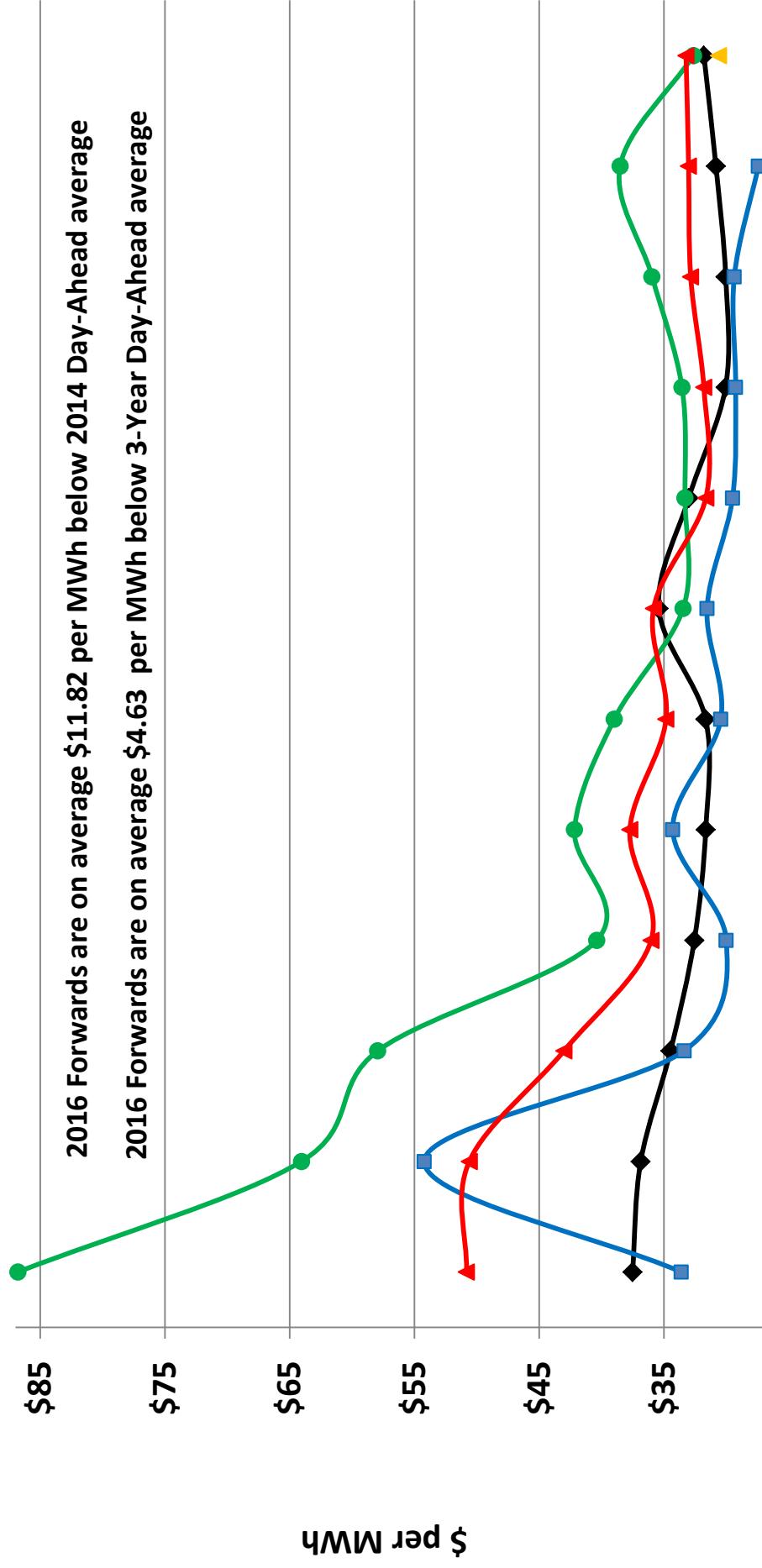
All prices are \$ per MWh and represent wholesale price component only.

The Current Percentile represents the percentage of days during the reference period in which the market price has been below the current price.

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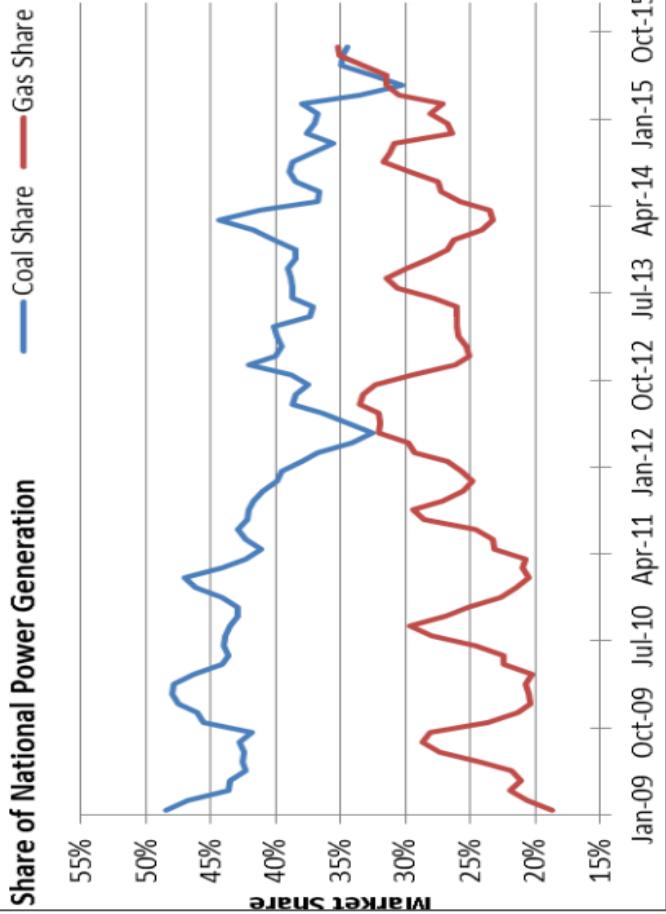
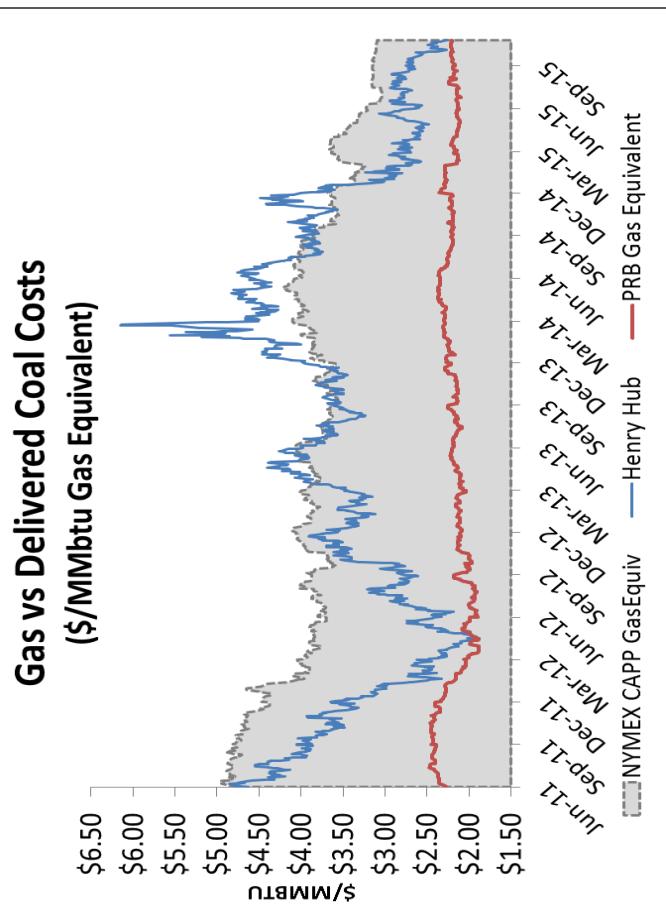
Historical Day-Ahead vs Forward Prices PJM AEP



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016 FWD	\$37.52	\$36.87	\$34.47	\$32.57	\$31.65	\$31.67	\$35.42	\$33.01	\$30.07	\$30.05	\$30.84	\$31.80
2015 FWD												\$30.62
2015 DA Average	\$33.62	\$54.23	\$33.38	\$30.01	\$34.30	\$30.45	\$29.50	\$29.25	\$29.36	\$27.43		
2014 DA Average	\$86.78	\$64.06	\$57.94	\$40.38	\$42.17	\$38.98	\$33.47	\$33.32	\$33.56	\$35.96	\$38.52	\$32.63
3 YR AVG	\$50.83	\$50.61	\$43.01	\$36.03	\$37.74	\$34.84	\$35.83	\$31.64	\$31.81	\$32.86	\$33.03	\$33.24

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Power Gen a Key Support As Gas Prices Near \$2.00/MMBtu Supply & Demand



- Spot prices have been moving to the lower end of the “CAPP” range (mid \$2 – mid \$3’s) and are now testing the western coal Powder River Basin coal floor in the low \$2/MMBtu range.
- Spot gas prices are getting near the April 2012 lows of \$1.90/MMBtu after a sharp pull back over the past week.
- Year-to-date gas has accounted for 31.5% of national mix, up 4.5% y-o-y while coal generation has fallen by 5.6% p-a-y to 34.4% of generation y-t-d.

Customer Takeaway: Testing the PRB coal floor should make additional gas units economical to run and we should see higher gas burns. This could provide the market support as it did in 2012 but cold weather is needed to spur demand higher overall.

Natural Gas Update OMA Energy Committee

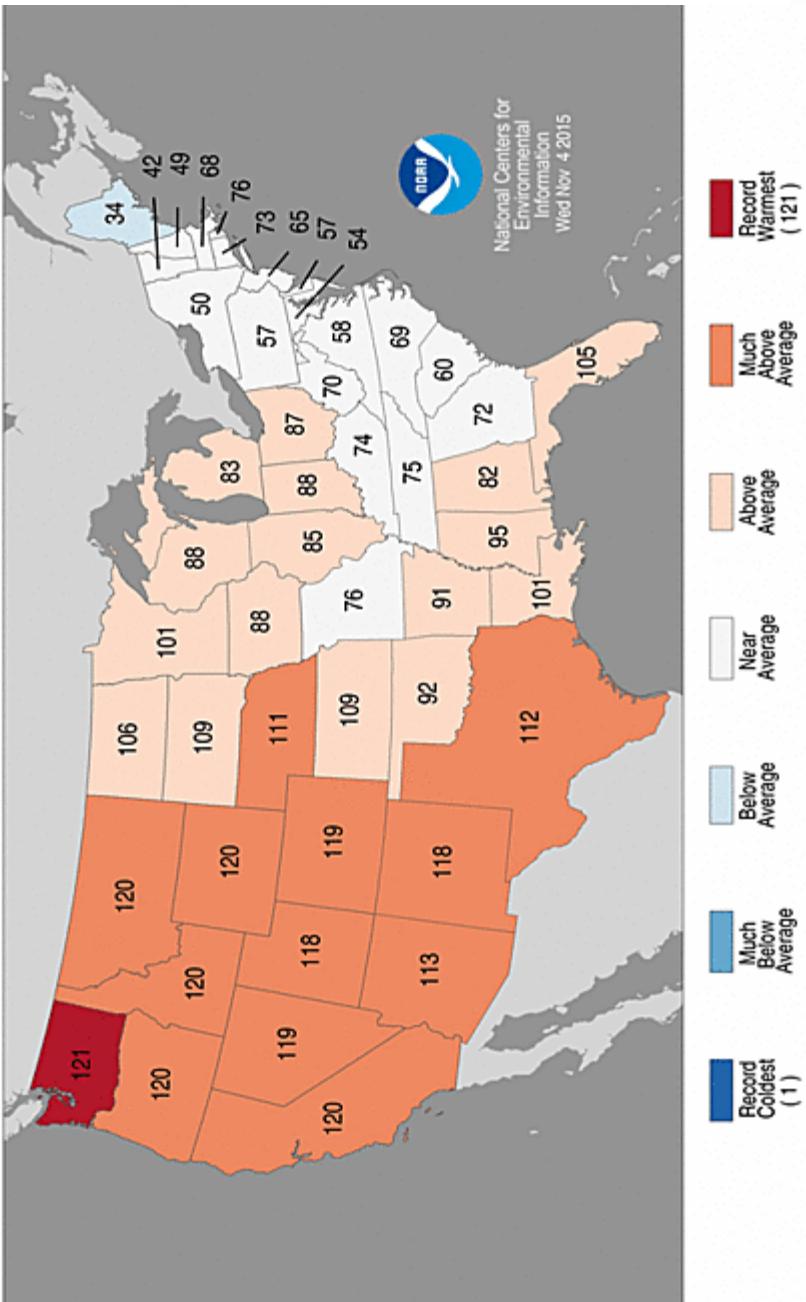
**Richard Ricks
NiSource
November 19, 2015**

Agenda

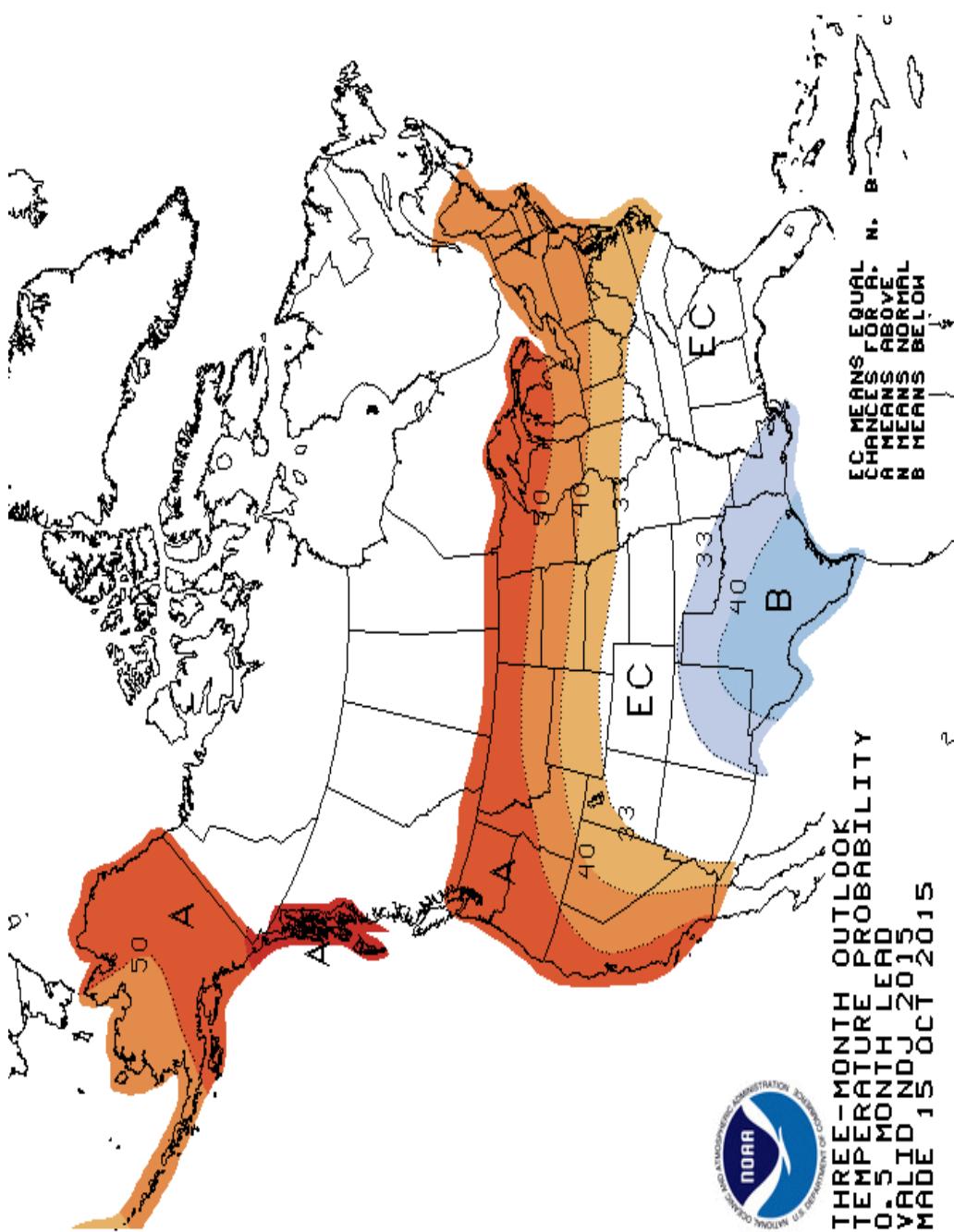
- Weather
 - National
 - 2015/2016 Winter
- National Storage
- Gas Pricing
 - NYMEX Prompt Month History
 - NYMEX Gas Futures
 - NYMEX Strip and Select Hub Pricing
- Domestic Gas Production
- Drilling Rig Counts

Warmer Fall Weather

Statewide Average Temperature Ranks
October 2015
Period: 1895-2015



Nov-Dec-Jan 2015-16 Temperature Outlook



El Nino Pattern Expected for 2015/2016 Winter

Winter 2015

El Nino Weather Pattern May Dominate

Summary

ENSO Alert System Status: El Niño Advisory

El Niño conditions are present.*

Positive equatorial sea surface temperature (SST) anomalies continue across most of the Pacific Ocean.

There is a greater than 90% chance that El Niño will continue through Northern Hemisphere winter 2015-16, and around an 85% chance it will last into early spring 2016.*

* Note: These statements are updated once a month (2nd Thursday of each month) in association with the ENSO Diagnostics Discussion, which can be found by clicking [here](#).

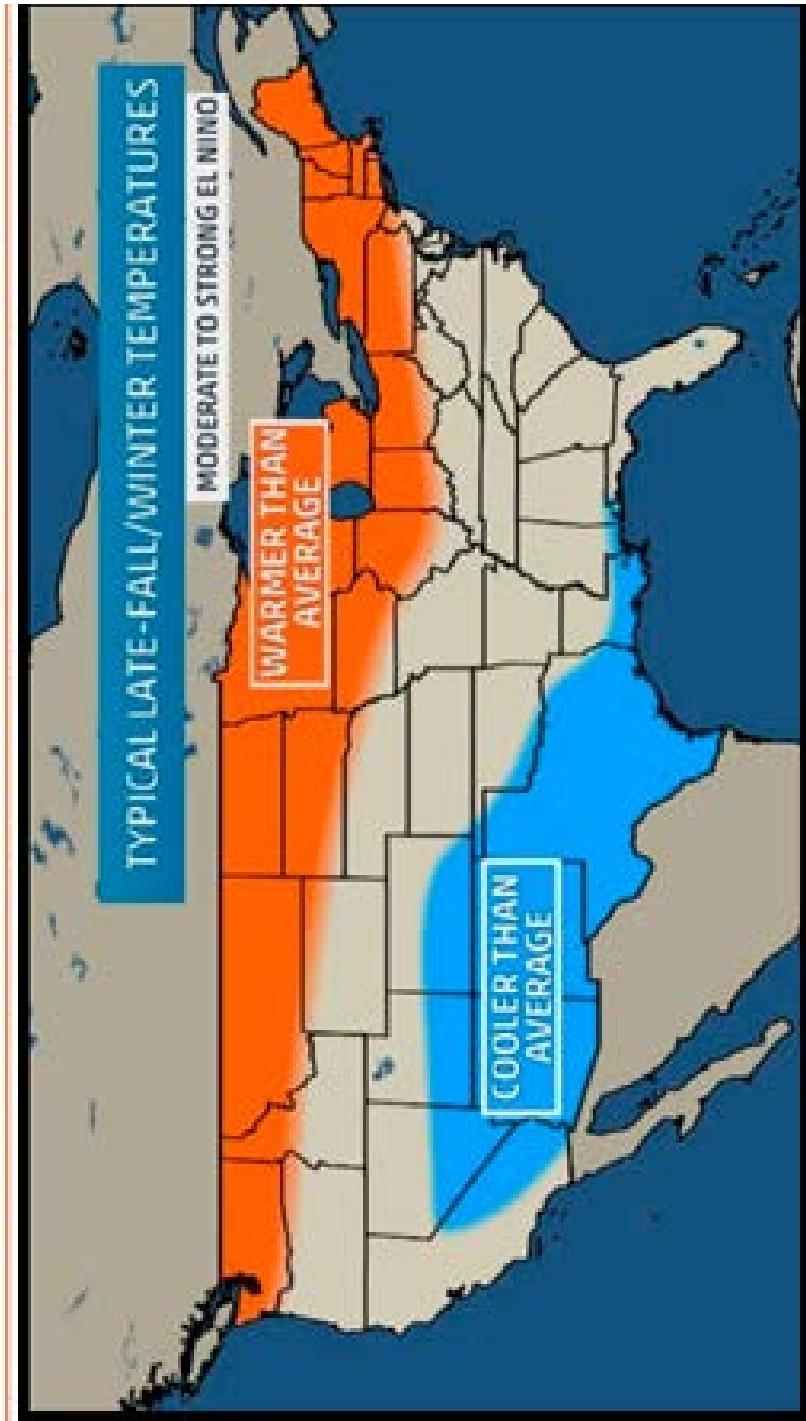
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EI Nino Anticipated Weather Pattern

Winter 2015

EI Nino Weather Pattern May Dominate



Ohio Degree Days - November 2015

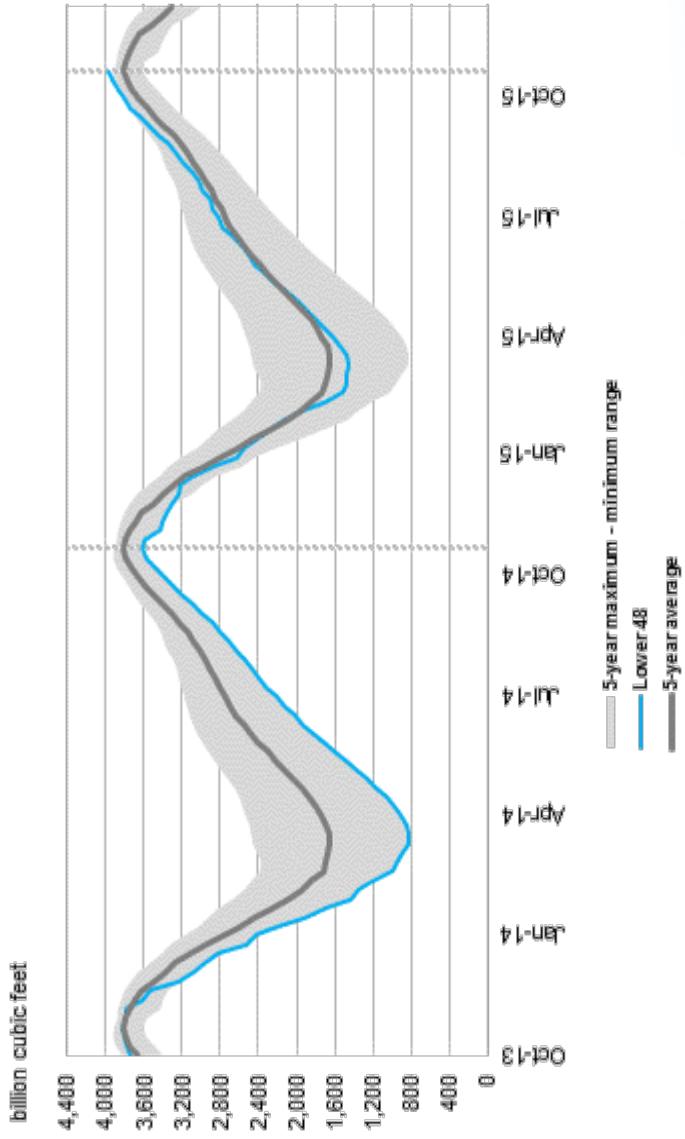
Degree Days vs. Normal

	<u>Actual DD</u>	<u>Normal DD</u>	<u>% to Normal</u>
November Month to Date	136	204	-33%
2015 Calendar Year to Date	4,511	4166	8%

Summary

Working gas in storage was 3,978 Bcf as of Friday, November 6, 2015, according to EIA estimates. This represents a net increase of 49 Bcf from the previous week. Stocks were 373 Bcf higher than last year at this time and 173 Bcf above the 5-year average of 3,805 Bcf. In the East Region, stocks were 17 Bcf above the 5-year average following net injections of 31 Bcf. Stocks in the Producing Region were 145 Bcf above the 5-year average of 1,238 Bcf after a net injection of 15 Bcf. Stocks in the West Region were 11 Bcf above the 5-year average after a net addition of 3 Bcf. At 3,978 Bcf, total working gas is above the 5-year historical range.

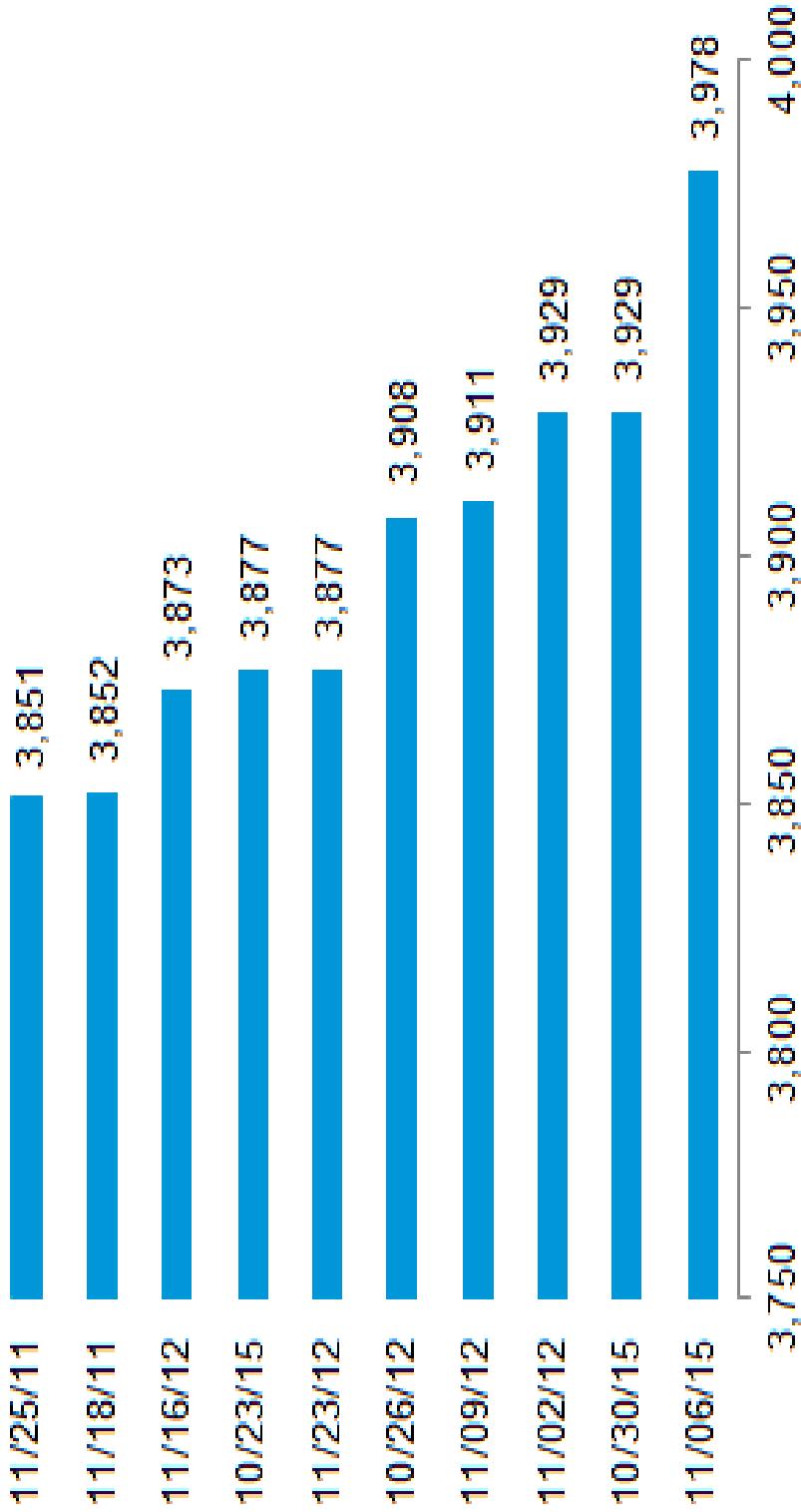
Working gas in underground storage compared with the 5-year maximum and minimum



Source: U.S. Energy Information Administration

Historically High Storage Inventory

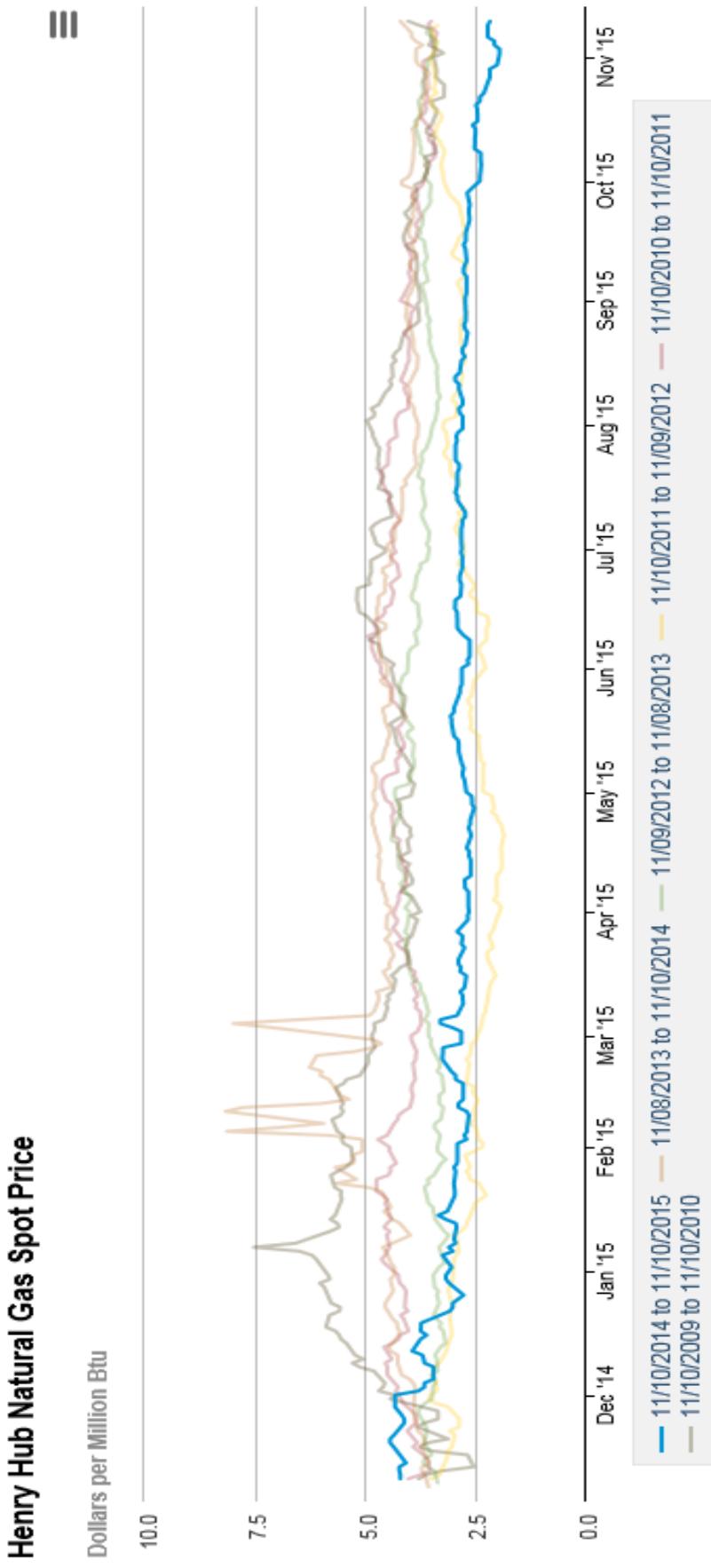
Highest overall working storage levels billion cubic feet



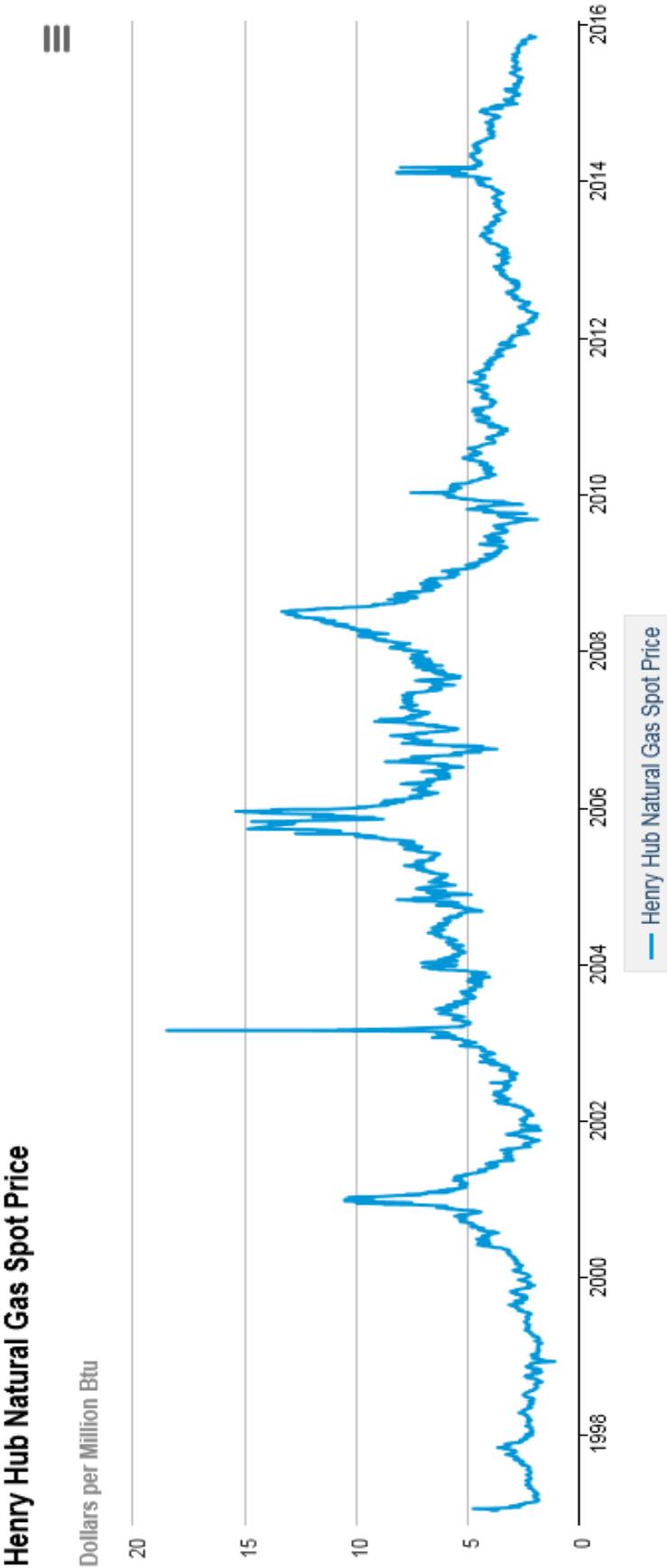
Source: U.S. Energy Information Administration, *Weekly Natural Gas Storage Report*



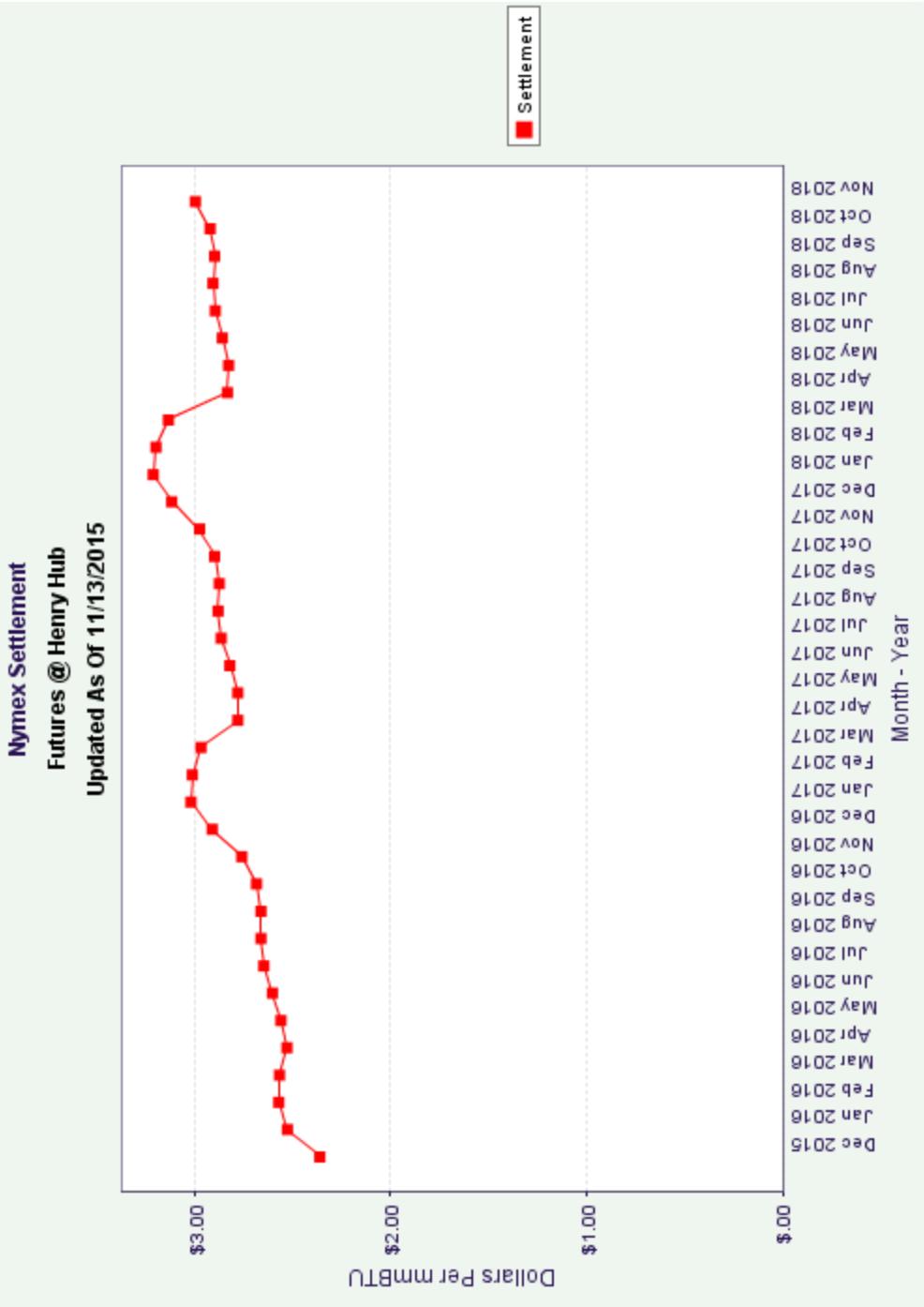
NYMEX Prompt Month Settlement – 6 Years



NYMEX Prompt Month Settlement History



NYMEX Futures Settlement



NYMEX Strip Pricing – Nov. 16, 2015

<u>Term</u>	<u>Settlement vs Last MTG</u>
3 Month	\$2.49 (\$2.72)
6 Month	\$2.52 (\$2.86)
12 Month	\$2.59 (\$2.89)
18 Month	\$2.70 (\$2.97)

Select Hub Pricing on 11-16-2015

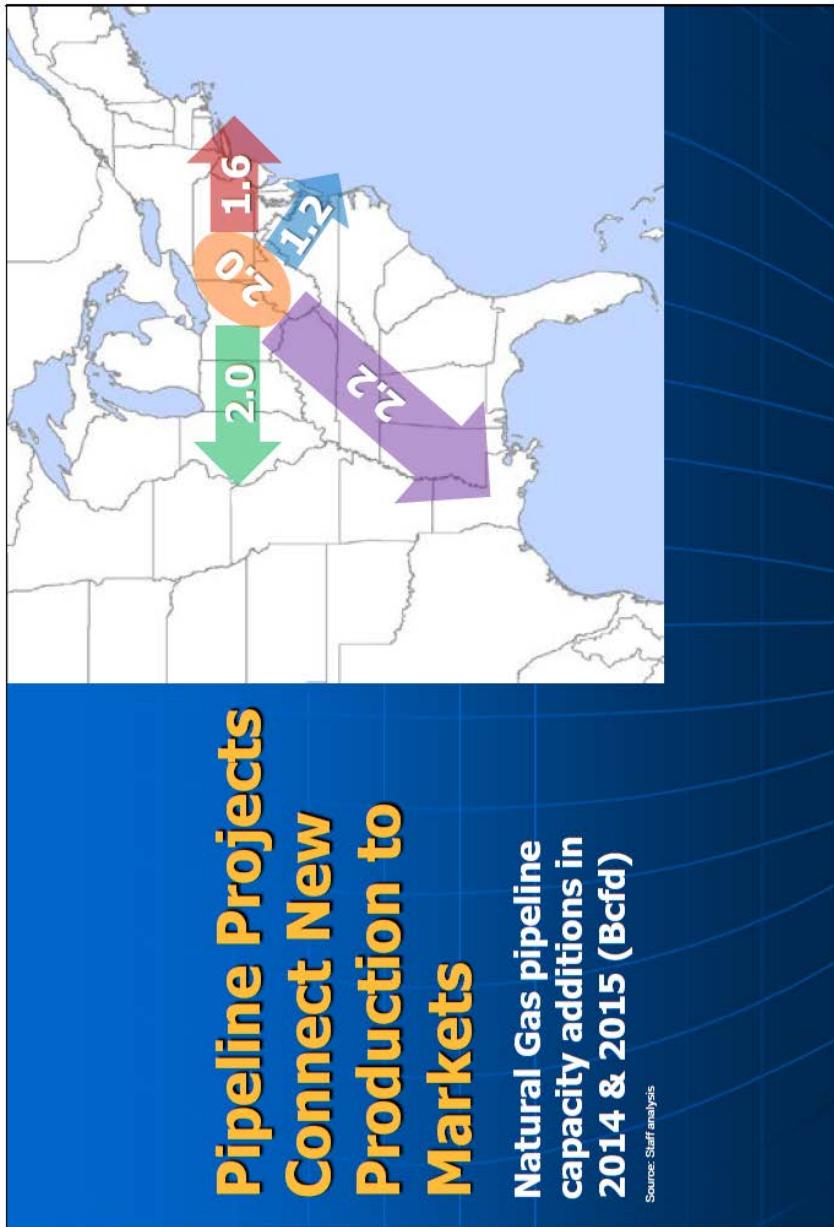
HUB LOCATION

PRICE vs Last MTG

Henry Hub	\$2.01	(\$2.70)
TCO Pool	\$1.91	(\$2.68)
Houston Ship Channel	\$1.98	(\$2.63)
Dominion South Point	\$1.08	(\$1.22)
TETCO M-3	\$1.15	(\$1.31)
TGP Zone 4	\$1.01	(\$0.60)

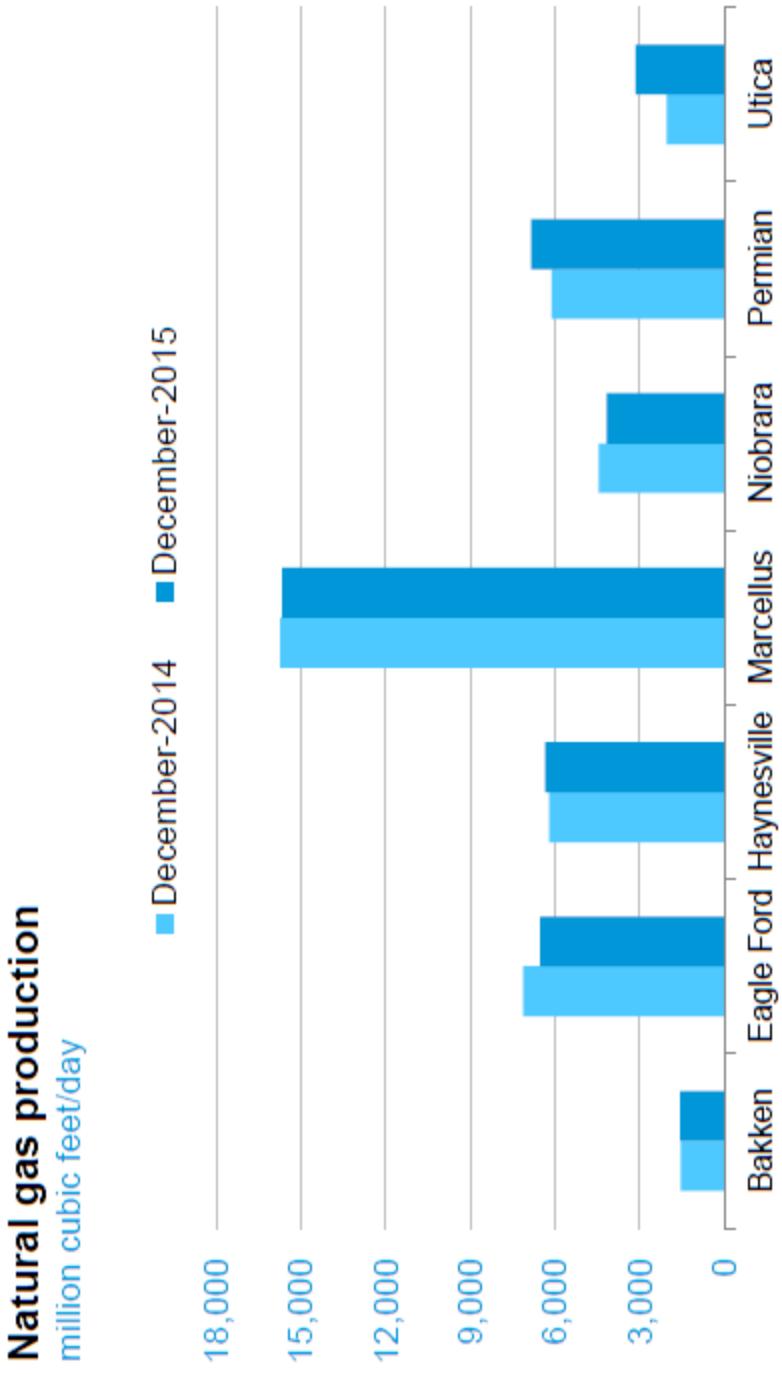
Dominion, TETCO, & TGP pricing is Marcellus Area

NORTHEAST PIPELINE ACTIVITY



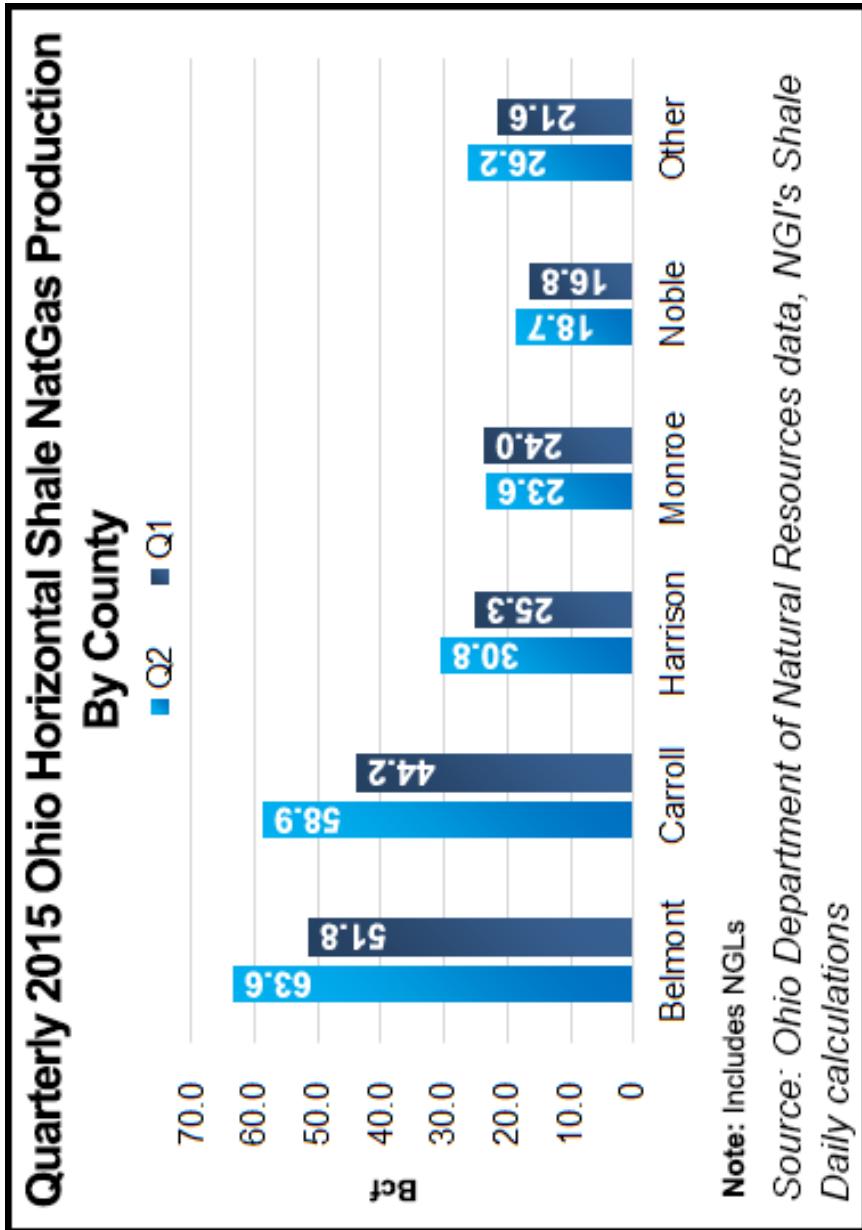
Growing Northeast natural gas production and new pipeline takeaway capacity continue to reshape the nation's flow patterns and prices. Since the start of 2014, 9 Bcf per day of capacity additions have come online to further link production with markets in the Mid-Atlantic, the Southeast, and the Midwest. As a result, the Northeast corner of the nation became a net exporter of natural gas for the first time this summer.

Gross U.S. Shale Gas Production – Affect of Price



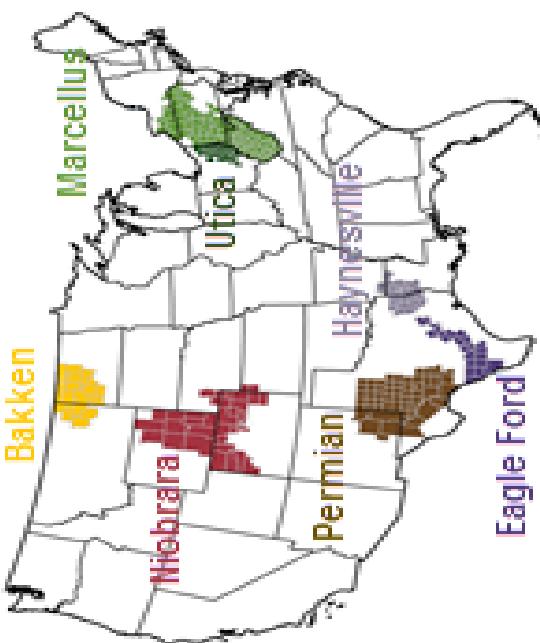
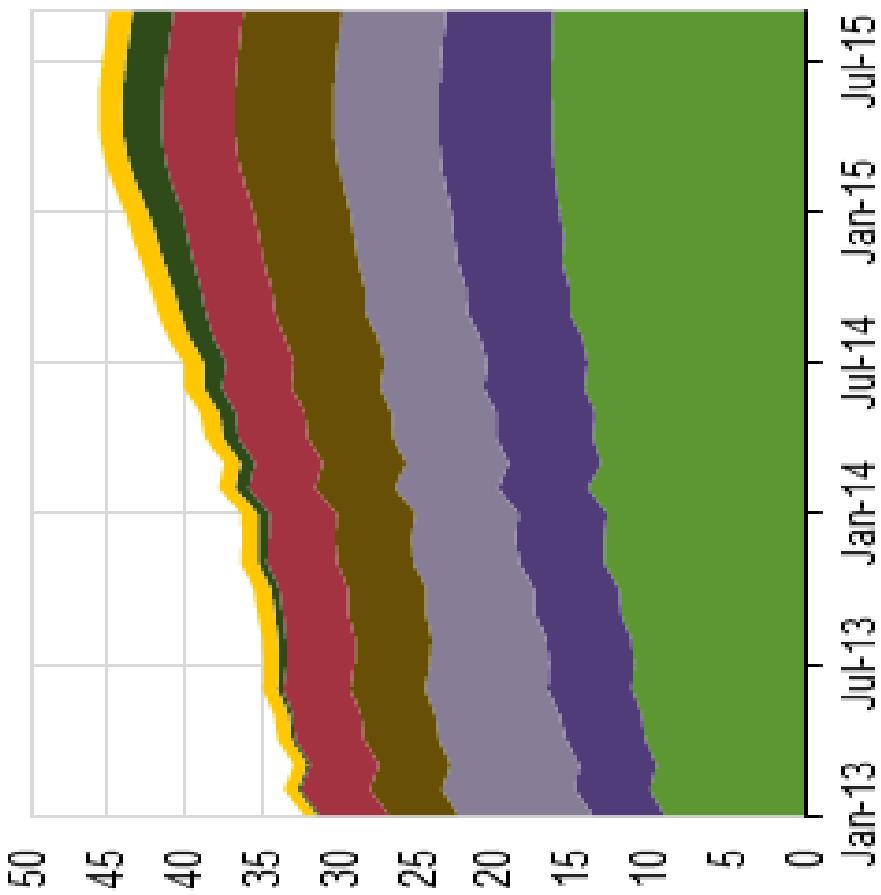
U. S. Energy Information Administration | Drilling Productivity Report

Ohio Counties Contribution of Shale Gas

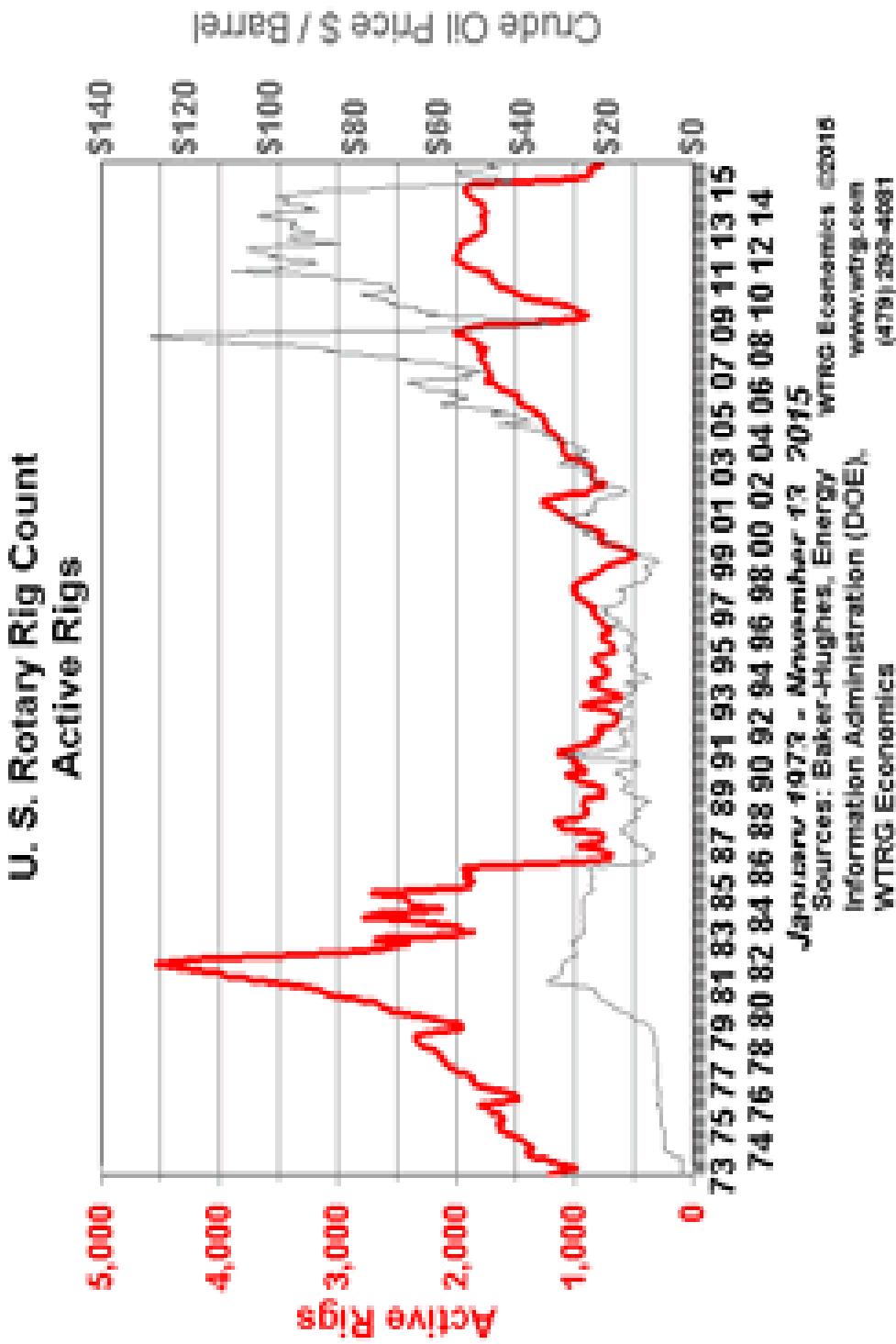


Near-Term Decline in Major Shale Regions

Monthly natural gas production in DPR regions (Jan 2013-Sep 2015)
billion cubic feet per day

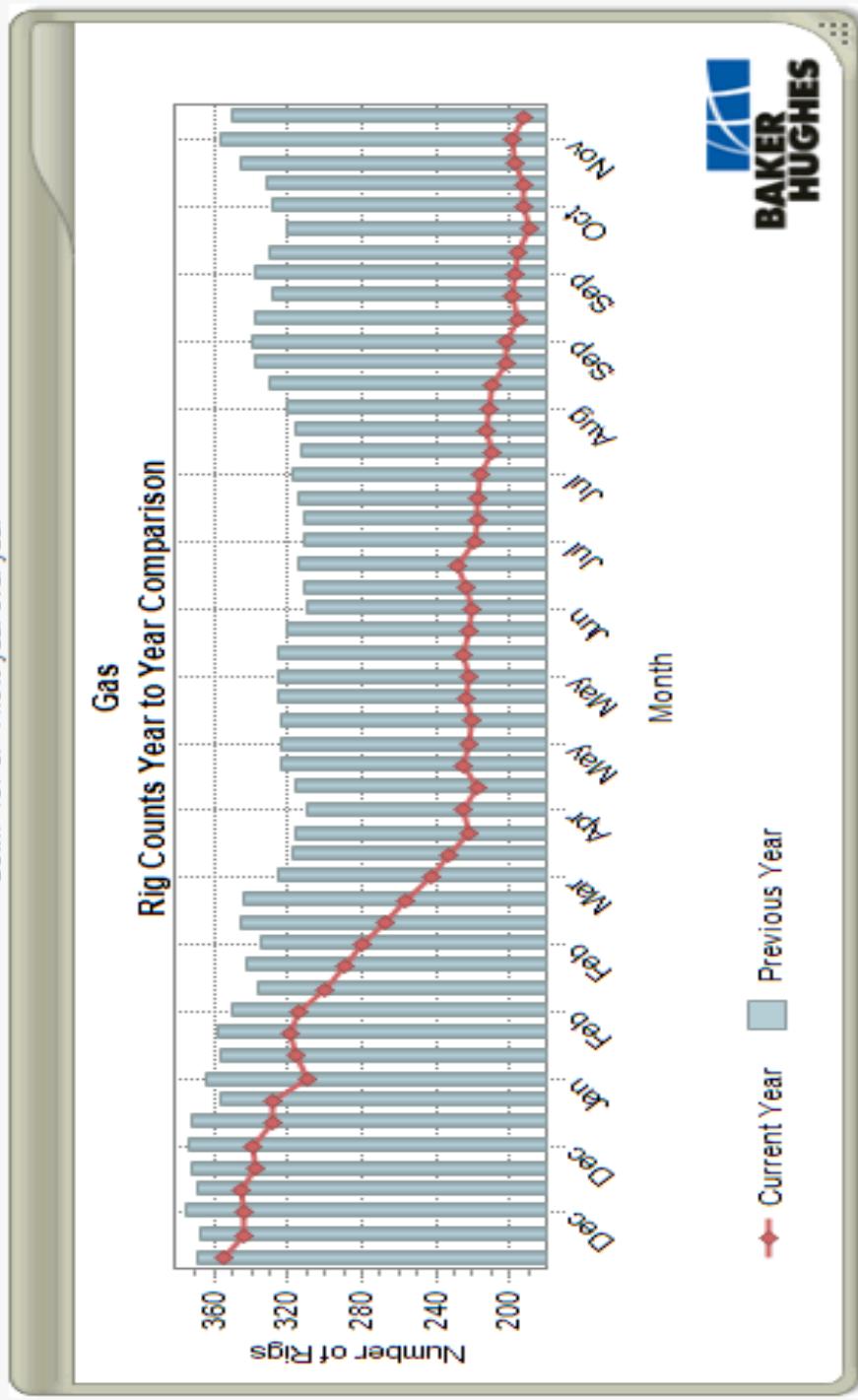


Long Term Active Rig Count



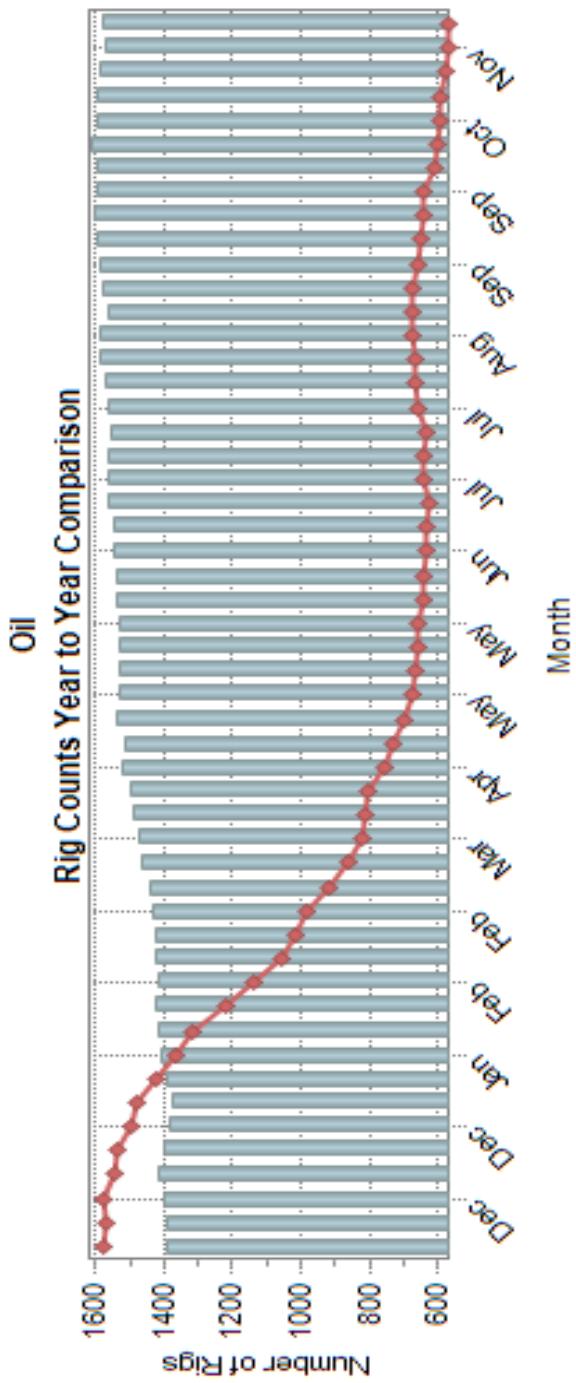
US Gas Rig Counts – Land and Offshore

Total Rigs 193 on 13-NOV-2015
Down -8 or -3.0% compared to last week
Down -157 or -44.9% year-over-year



US Oil Rig Counts – Land and Offshore

Total Rigs 574 on 13-NOV-2015
Up 2 or 0.3% compared to last week
Down -1004 or -63.6% year-over-year



● Current Year ■ Previous Year

2015 World Wide Rig Count

BAKER HUGHES INCORPORATED

WORLDWIDE RIG COUNT

	2015	Latin America	Europe	Africa	Middle East	Asia Pacific	Total Int'l.	Canada	U.S.	Total World
Jan	351	128	132	415	232	1258	368	1683	3309	
Feb	355	133	132	415	240	1275	363	1348	2986	
Mar	351	135	125	407	233	1251	196	1110	2557	
Apr	325	119	120	410	228	1202	90	976	2268	
May	327	116	100	398	217	1158	80	889	2127	
Jun	314	113	103	401	215	1146	129	861	2136	
Jul	313	108	94	391	212	1118	183	866	2167	
Aug	319	109	96	393	220	1137	206	883	2226	
Sep	321	109	96	396	218	1140	183	848	2171	
Oct	294	108	93	403	213	1111	184	791	2086	
Nov										
Dec										
Avg.	327	118	109	403	223	1180	198	1026	2403	