

**DRAFT Alternative Energy Portfolio Standard Report  
by the Staff of the Public Utilities Commission of Ohio  
for the 2011 Compliance Year**

**Issued April 9, 2013**

**Pursuant to Ohio Revised Code 4928.64(D)(1)**

**In PUCO Case No. 12-2668-EL-ACP**

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## I. Executive Summary

Amended Substitute Senate Bill 221 implemented Ohio's Alternative Energy Portfolio Standard (AEPS). The AEPS consists of both renewable energy resources and advanced energy resources. The AEPS contains specific compliance benchmarks for total renewable energy resources, including a specific solar requirement, beginning in 2009. The 2011 compliance year marked the third year under the state's AEPS.

Table 2 in the report summarizes the compliance obligations and compliance performances for 2011 based on the companies' annual compliance status report filings. As shown by Table 2, compliance during 2011 was nearly universal with only the total solar obligation (99.99% compliant) falling just short of full compliance. In several categories the regulatory performance exceeded the requirements.

Pursuant to Senate Bill 315, Table 3 presents the average prices paid for renewable energy credits (RECs) and solar RECs (S-RECs) used by the companies for 2011 compliance. The compliance markets continue to evolve, so the prices in Table 3 should not be interpreted as indicative of current market prices.

The Commission has been actively reviewing and certifying facilities under the AEPS, with more than 4,000 facilities having been certified as of December 31, 2011. The tables provided in Appendix A include details on the facilities certified by the Commission as of December 31, 2011, including data on the location of the facilities, the resources/technologies utilized, the facilities' generating capacity, and their on-line dates.

Appendix B includes details on compliance impediments listed by companies in their 2011 compliance reports. The most prominently mentioned potential impediment involved concerns about an adequate future supply of renewable and solar resources, particularly from in-state facilities.

The Commission, with the support of the National Association of Regulatory Utility Commissioners, retained an outside consultant to evaluate a number of issues related to the state's AEPS. The report that resulted from this engagement was issued in September 2011 and filed on April 16, 2012, in PUCO Case No. [12-1100-EL-ACP](#) and is hereby incorporated by reference (NARUC September 2011 Report).

## II. Acronyms

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AEPS:	Alternative Energy Portfolio Standard
CRES:	Competitive Retail Electric Service
DC:	Direct Current
EDU:	Electric Distribution Utility
KW:	Kilowatts
MW:	Megawatts
MWHs:	Megawatt-hours
OAC:	Ohio Administrative Code
ORC:	Ohio Revised Code
REC:	Renewable Energy Credit
RFP:	Request for Proposal
SB221:	Amended Substitute Senate Bill 221
SREC:	Solar Renewable Energy Credit

### III. Statutory History

Amended Substitute Senate Bill 221 (SB221) was signed by Governor Strickland on May 1, 2008, with an effective date of July 31, 2008. SB221 contained many significant components, including the creation of the state's new alternative energy portfolio standard (AEPS). The AEPS includes both advanced energy resources and renewable energy resources, as defined by Ohio Revised Code (ORC) Section [4928.01](#)(A)(34) and (37) respectively.

The AEPS is addressed most specifically in [4928.64](#), ORC, with additional supporting language also found in [4928.65](#), ORC. The overall requirement of the AEPS is that no less than twenty-five percent (25%) of retail electric sales by electric distribution utilities (EDUs) and competitive retail electric service (CRES) providers in the state be sourced from alternative energy resources by 2025, and each calendar year thereafter.

Of the 25% alternative energy resources requirement, the statute specified that at least half must come from renewable energy resources. Included within the renewable energy benchmarks is a specific requirement for solar resources (i.e., "solar carve out"). The statute further required that at least half of the renewable requirements be satisfied through facilities located in Ohio.

To implement the renewable component of the AEPS, the statute included specific annual benchmarks beginning in 2009, including the solar carve-out. The compliance efforts relative to the 2011 renewable requirements constitute the focal point of this report. The requirements for 2011, as dictated by ORC [4928.64](#)(B)(2), are as follows:

Year	Renewable Energy Resources	Solar Energy Resources	Non-Solar Energy Resources <sup>1</sup>
2011	1.00%	0.030%	0.970%

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<sup>1</sup> "Non-Solar Energy Resources" is used in this context to represent the total renewable energy resource requirement net of the specific solar requirement

#### IV. Directive for Annual Report

ORC [4928.64\(D\)\(1\)](#), includes a requirement for a report by the Commission to the General Assembly. The Commission has prepared this report, consistent with the following directive:

The commission annually shall submit to the general assembly in accordance with section [101.68](#) of the Revised Code a report describing all of the following: (a) The compliance of electric distribution utilities and electric services companies with division (B) of this section; (b) The average annual cost of renewable energy credits purchased by utilities and companies for the year covered in the report; (c) Any strategy for utility and company compliance or for encouraging the use of alternative energy resources in supplying this state's electricity needs in a manner that considers available technology, costs, job creation, and economic impacts. The commission shall begin providing the information described in division (D)(1)(b) of this section in each report submitted after the effective date of the amendment of this section by S.B. 315 of the 129th general assembly. The commission shall allow and consider public comments on the report prior to its submission to the general assembly. Nothing in the report shall be binding on any person, including any utility or company for the purpose of its compliance with any benchmark under division (B) of this section, or the enforcement of that provision under division (C) of this section.

The 2011 compliance efforts of the electric distribution utilities and electric services companies are summarized in Section VI, while the average REC costs are discussed in Section VII.

Further, the NARUC September 2011 Report, described in greater detail in Section VIII, addresses several potential means of encouraging the use of alternative energy resources.

## V. Certification Activities

During the rulemaking process to implement the AEPS, the Commission proposed, and ultimately implemented, a certification process by which renewable energy generating facilities are evaluated to ensure their consistency with the requirements of ORC 4928.64. This certification process is addressed in Ohio Administrative Code (OAC) Section 4901:1-40-04(F), and focuses primarily, but not exclusively, on the following considerations:

- A. The resource or technology employed at the facility,
- B. The placed-in service date of the facility,
- C. The deliverability to the state of the facility's electrical output

The Commission first made its certification application form available in June 2009. Since that time, the application form has undergone revisions based on experience gained with the process. In addition, in October 2010, the Commission introduced an online application form to ensure consistency and efficiency in the overall process.

There is no fee associated with the voluntary application process, and the vast majority of these applications are processed under a 60 day auto-approval process, with certification issued on the 61<sup>st</sup> day after filing. However, some applications, either due to a need for additional information or due to facts unique to the application which may introduce novel policy consideration, are suspended for specific Commission consideration. All of the applications can be viewed online through the Commission's Docketing Information System, ensuring transparency for the process. The rule further permits interested persons to intervene in, and provide comments on, any certification proceeding.

Only renewable energy credits (RECs) and solar renewable energy credits (S-RECs) from PUCO-certified renewable energy generating facilities are recognized for AEPS compliance purposes. There are potentially eligible renewable facilities within the state that have not sought certification to date, perhaps because their renewable facilities were installed to satisfy a different objective. The output from such facilities would not be recognized under the AEPS. In addition, the Commission has certified facilities that were not operational at the time of certification. This should be considered when interpreting the numbers in Table 1 below. It should be noted, however, that RECs and S-RECs are a function of generation output, and therefore a non-operating facility is not capable of producing RECs or S-RECs.

As of December 31, 2011, the Commission had received approximately 4,500 applications as indicated by the table below.

Table 1.

	As of 12/31/2009	As of 12/31/2010	As of 12/31/2011
Applications Filed	187	1,259	4,523
Applications Certified	81	824	4,013
Applications Pending	90	402	457
Applications Suspended	0	4	4
Applications Denied	5	7	8
Applications Withdrawn	11	18	34
Applications Dismissed/Certificates Revoked	0	4	7

Additional details on the applications certified as of December 31, 2011, are provided in Appendix A to this report.

As indicated in Table 1, eight facilities have been denied certification as of December 31, 2011. Two of these facilities<sup>2</sup> were denied on the basis of failing to satisfy the statutory placed in-service date requirement, five facilities<sup>3</sup> were deemed to have not satisfied the deliverability requirement, and one facility<sup>4</sup> was registered in an attribute tracking system not recognized by Commission rule.

For current facility certification data, please see the PUCO Ohio Renewable and Advanced Energy Portfolio Standard web page:

<http://www.puco.ohio.gov/puco/renewables/>

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<sup>2</sup> Cases 09-0751-EL-REN and 09-0877-EL-REN

<sup>3</sup> Cases 09-555-EL-REN; 09-835-EL-REN; 09-836-EL-REN; 10-0313-EL-REN; and 10-0322-EL-REN

<sup>4</sup> Case 11-4171-EL-REN



## VI. Summary of 2011 Compliance Activities

The information in Table 2 below summarizes the 2011 compliance performances, as presented by the companies in their respective annual compliance status reports. The final resolution of these proceedings may support these figures, or the Commission may determine that revisions are warranted. The details for the CRES Providers have been aggregated so as to protect individual company data for which confidential treatment has been requested.

Renewable energy credits (RECs) and solar RECs (S-RECs) represent the compliance currency for Ohio's alternative energy portfolio standard. Based on the compliance status reports, the companies obtained RECs and S-RECs through several different methods including, but not limited to, self-generation, bilateral transactions, brokers, residential REC programs, and the use of requests for proposals (RFPs).

### Non-Solar Compliance

The figures for non-solar compliance, representing the total renewable requirement net of the specific solar requirement, show a total compliance obligation of approximately 1.3 million MWHs for 2011. Compliance with that total figure was exceeded, with more RECs having been obtained than was necessary to satisfy the aggregate 2011 compliance obligation.

The minimum requirement for in-state non-solar resources totaled 654,639 MWHs, with actual performance exceeding that minimum requirement. As demonstrated by Table 2, the quantity obtained above the minimum is attributed to the CRES providers in that several relied exclusively on in-state resources to satisfy their total non-solar requirement.

### Solar Compliance

The total solar obligation for 2011, including deficiencies from previous years that were rolled forward to 2011, was 42,089 MWHs, with nearly 100% of the requirement having been satisfied.

The minimum requirement for in-state solar resources totaled 21,856 MWHs, with the performance having exceeded that requirement.

Table 2

**2011 Compliance Summary Data**

Source: Companies' annual compliance status report filings

Company	Non-Solar Renewable (MWHs)				Solar Renewable (MWHs)			
	Total Required	In-State Required	Total Obtained	In-State Obtained	Total Required	In-State Required	Total Obtained	In-State Obtained
CEI	124,773	62,387	124,773	62,387	4,428	2,499	4,428	2,499
Columbus Southern Power	186,036	93,018	186,036	93,018	5,754	2,877	5,754	2,877
Dayton Power & Light	109,190	54,595	109,190	54,595	3,377	1,689	3,377	1,689
Duke Energy - Ohio	155,338	77,669	155,338	77,669	4,804	2,402	4,804	2,402
Ohio Edison	161,708	80,854	161,708	80,854	5,707	3,207	5,707	3,207
Ohio Power	235,108	117,554	235,108	117,554	7,271	3,636	7,271	3,636
Toledo Edison	65,830	32,915	65,830	32,915	2,338	1,320	2,338	1,320
CRES Providers	271,472	135,647	272,222	139,325	8,410	4,226	8,406	4,318
<b>TOTALS</b>	<b>1,309,455</b>	<b>654,639</b>	<b>1,310,205</b>	<b>658,317</b>	<b>42,089</b>	<b>21,856</b>	<b>42,085</b>	<b>21,948</b>

## Notes:

- 1) The numbers above are from the companies' annual compliance status report filings. The actual compliance obligations and performances may vary pending Commission review of the filings.
- 2) "Non-Solar" is used in this context to represent the total renewable energy requirement net of the solar requirement.
- 3) The "In-State Requirement" is a minimum and is calculated as 50% of the total requirement.

## VII. Average REC Costs

Amended Substitute Senate Bill 315 (SB 315), effective date of September 10, 2012, included a new provision that required the Commission's AEPS reports to the General Assembly to describe " ... the average annual cost of renewable energy credits purchased by utilities and companies for the year covered in the report."<sup>5</sup> In order to obtain and compile this required REC cost information, a Commission Attorney Examiner issued an Entry that ordered each electric distribution utility and electric services company to file such average REC cost data for the 2011 compliance year.<sup>6</sup> The Entry specified that the cost information be provided for the following categories in recognition of the market differences between the REC/S-REC categories:

- Ohio Solar;
- Other Solar;
- Ohio Non-Solar; and
- Other Non-Solar

In response to its Entry, the Commission received cost information from most, but not all, of the companies that had a 2011 AEPS compliance obligation.<sup>7</sup> Commission Staff used this average cost information, along with the Companies' respective compliance volumes for 2011, to calculate weighted average costs. This weighted average REC cost information, provided separately for EDUs and electric service companies, is summarized in Table 3 below. The compliance markets continue to evolve, so the prices in Table 3 should not be interpreted as indicative of current market prices.

Table 3

	<b>Ohio Electric Distribution Utilities</b>	<b>Ohio Electric Service Companies</b>
<b>Category</b>	<b>Avg. \$/REC</b>	<b>Avg. \$/REC</b>
Ohio Solar	\$228.74	\$307.65
Other Solar	\$157.81	\$148.08
Ohio Non-Solar	\$110.55	\$20.83
Other Non-Solar	\$19.41	\$5.97

<sup>5</sup> 4928.64(D)(1)(b), Revised Code

<sup>6</sup> Entry dated 10/18/12, Case No. 12-2668-EL-ACP

<sup>7</sup> REC cost data were not provided by FirstEnergy Solutions, Duke Energy Retail Sales, APN Starfirst, Champion Energy Services, Border Energy Services, NextEra, or DTE.

## VIII. Strategies / Policy Consideration

The Commission, with financial and administrative support of the National Association of Regulatory Utility Commissioners (NARUC), engaged Ed Holt & Associates, Inc. to determine Ohio's alternative energy market availability and potential, and to provide recommendations about methodologies for determining solar and non-solar renewable alternative compliance payment levels under Ohio's alternative energy portfolio standard. The report *Alternative Energy Resource Market Assessment* issued in September 2011 and filed on April 16, 2012, in PUCO Case No. [12-1100-EL-ACP](#), is hereby incorporated by reference and available at <http://www.puco.ohio.gov/puco/renewables/>

Additionally, a training session was presented to PUCO staff on the cost of Renewable Energy Spreadsheet Tool (CREST) financial model used in the market assessment. This model was developed for the National Renewable Energy Laboratory to analyze the cost and economic drivers of renewable energy projects, and may be employed to help determine appropriate renewable energy compliance payment levels.

The Holt study also provided information about additional policies, deployment strategies, and incentives to improve market availability of eligible resources. The third section of the report addresses five policy approaches in promoting renewable energy development, all or some of which may potentially be useful for consideration in Ohio. They include long-term contracting policies, feed-in-tariffs, customer-sited or distributed generation support, tax incentives, and public benefit charges and fund administration.

In addition to monitoring and enforcing compliance with the AEPS, it is important to foster strategies for compliance with the standard and encourage the use of alternative generating resources with consideration given to available technology, costs, job creation, and economic impacts, as directed by the statute.

Currently in the United States, renewable energy policy and financial incentives are a continually evolving mix of federal and state level initiatives to promote cleaner, domestic energy sources and economic development. Further, renewable energy development and regulation are dramatically growing around the world in national and regional markets, and it is important for Ohio policymakers and stakeholders to keep informed about alternative policies and trends in relation to Ohio's own electricity portfolio standard, and develop additional policies or incentives as needed to support effective implementation of the standard at reasonable costs.

## APPENDIX A

### 1. PUCO Certified Renewable Energy Generating Facilities by Resource Type

Renewable Generation Type	FACILITIES CERTIFIED <sup>2</sup>			CAPACITY (megawatts)		
	Count	Ohio	Outside Ohio	Capacity	Ohio	Outside Ohio
Solar Photovoltaic	3,914	509	3,405	130.65	42.34	88.31
Wind	37	20	17	2,445.56	418.41	2,027.15
Hydroelectric	3	1	2	123.09	1.09	122
Solid Waste	3	2	1	97.80	42.8	55
Abandoned Coal Mine Methane	1	1	-	49	49	-
<b>Totals:</b>	<b>3,958</b>	<b>533</b>	<b>3,425</b>	<b>2,846.10</b>	<b>553.64</b>	<b>2,292.46</b>
Biomass/Biogas	Count	Ohio	Outside Ohio	Capacity	Ohio	Outside Ohio
Landfill Gas	33	9	24	358.42	113.72	244.7
Anaerobic Digestion	6	3	3	6.66	3.45	3.21
Food Processing	3	3	-	2.51	2.51	-
Wastewater Treatment	1	1	-	0.34	0.34	-
Wood Waste	1	1	-	177	177	-
<b>Biomass/Biogas Totals:</b>	<b>44</b>	<b>17</b>	<b>27</b>	<b>544.93</b>	<b>297.02</b>	<b>247.91</b>
CoFired <sup>1</sup>	Count	Ohio	Outside Ohio	Capacity	Ohio	Outside Ohio
Biomass	7	7	-	-	-	-
Paper Manufacturing	4	3	1	-	-	-
<b>CoFired Totals:</b>	<b>11</b>	<b>10</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Grand Totals:</b>	<b>4,013</b>	<b>560</b>	<b>3,453</b>	<b>3,391.03</b>	<b>850.66</b>	<b>2,540.37</b>

1. CoFired projects have been included in the number of facilities certified but have been excluded from the megawatt capacity summary due to their variable nature
2. Facilities Certified through 12/31/2011

2. PUCO- Certified Renewable Energy Generating Facilities by State of Facility

State in Which Facility is Located	Facilities Certified	Capacity (megawatts)
Ohio	560	850.66
Indiana	109	1,323.11
Kentucky	127	17.19
Michigan	20	69.58
Pennsylvania	3,131	744.19
West Virginia	66	386.3
Other	0	0
<b>Totals:</b>	<b>4,013</b>	<b>3,391.03</b>

- Co-firing projects have been included in the number of facilities certified but have been excluded from the megawatt capacity summary due to their variable nature
- Facilities certified through 12/31/2011

3. PUCO-Certified Solar PV Generating Facilities by State of Facility

State in Which Facility is Located	Solar Facilities Certified	Capacity (megawatts)
Ohio	509	42.34
Indiana	89	0.75
Kentucky	120	0.39
Michigan	16	0.18
Pennsylvania	3,117	86.69
West Virginia	63	0.3
Other	0	0
<b>Totals:</b>	<b>3,914</b>	<b>130.65</b>

- Facilities certified through 12/31/2011

4. PUCO-Certified Solar PV Generating Facilities by Generating Capacity

Individual Generating Capacities of Solar PV Facilities	Facilities Certified
0 to 10 kW	2,644
10.1 kW to 30 kW	853
30.1 kW to 60 kW	152
60.1 kW to 100 kW	100
100.1 kW to 200 kW	79
200.1 kW to 1 MW	73
1.1 MW to 2 MW	5
2.1 MW and larger	8
<b>Total:</b>	<b>3,914</b>

- Facilities certified through 12/31/2011

5. PUCO-Certified Ohio Solar PV Generating Facilities by On-Line Date

Facility On-Line Date	Solar Facilities Certified	Capacity (megawatts)
Pre 8/1/2008	51	0.44
8/2/2008 - 12/31/2008	20	0.35
2009	75	1.74
2010	171	20.03
2011	192	19.79
<b>Totals:</b>	<b>509</b>	<b>42.34</b>

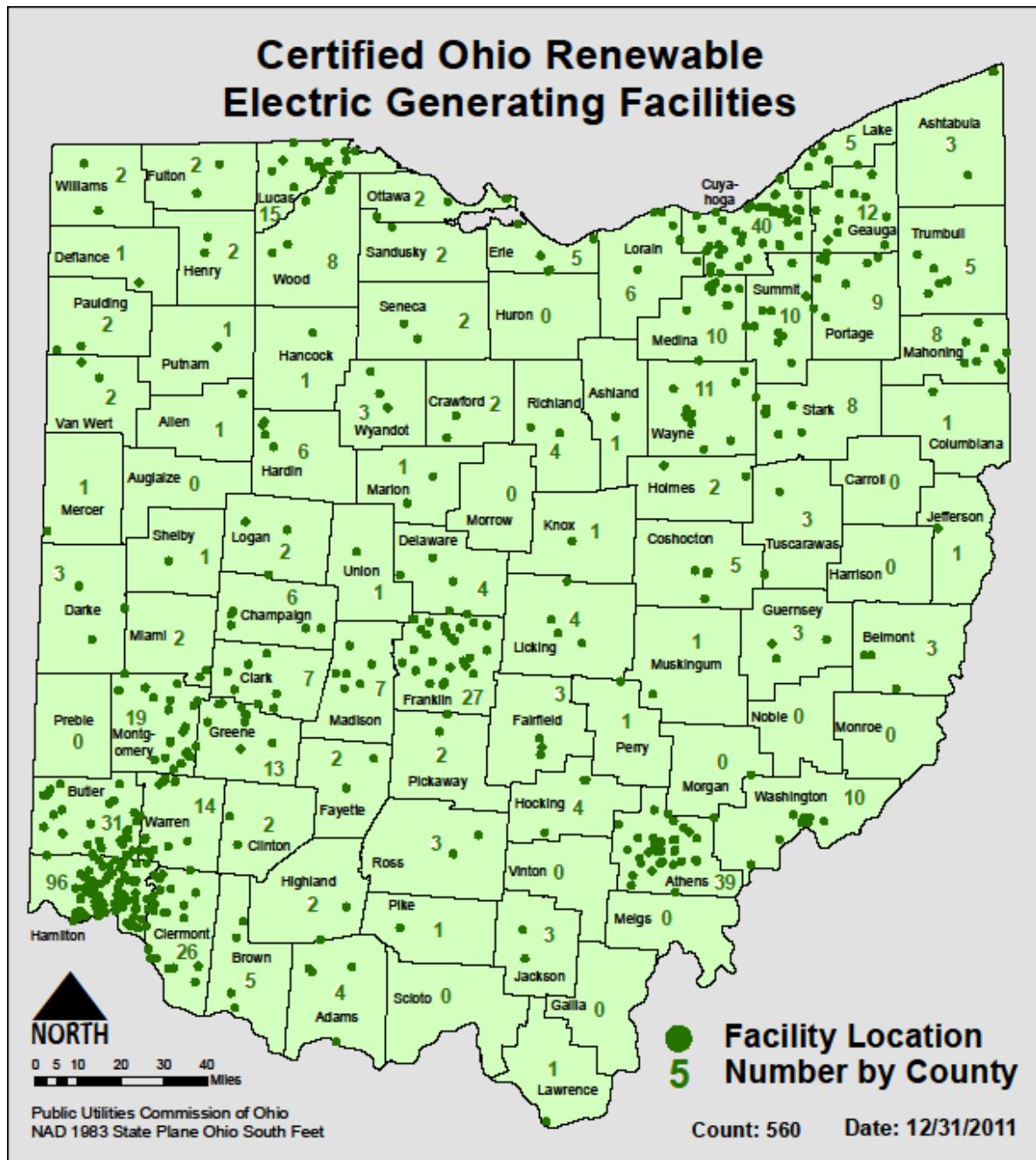
- Facilities certified through 12/31/2011

6. PUCO-Certified Ohio Wind Facilities by On-Line Date

Facility On-Line Date	Wind Facilities Certified	Capacity (megawatts)
Pre 8/1/2008	3	7.22
8/2/2008 - 12/31/2008	0	0
2009	4	0.37
2010	9	3.31
2011	4	407.51
<b>Totals:</b>	<b>20</b>	<b>418.41</b>

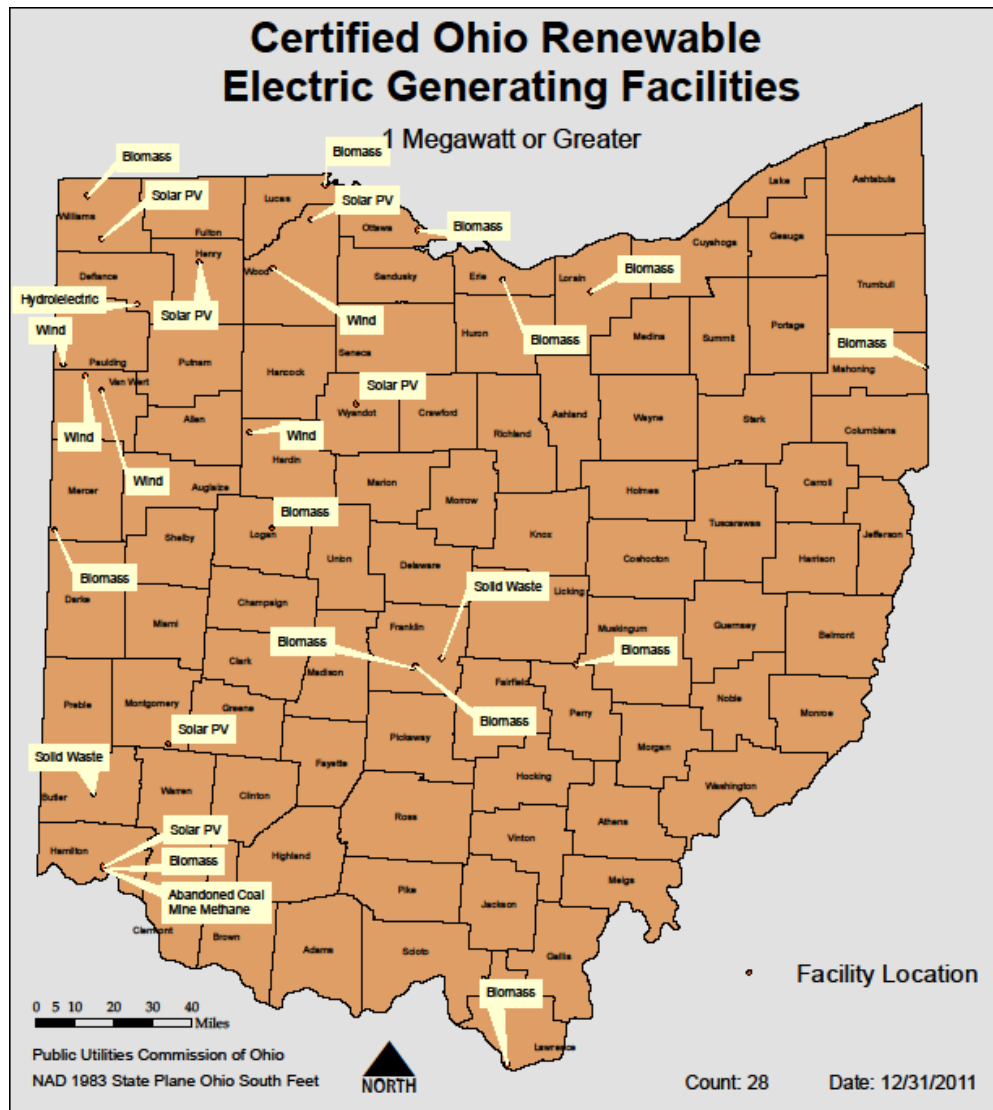
- Facilities certified through 12/31/2011

7. Certified Ohio Renewable Electric Generating Facilities Count and Location Map





8. Certified Ohio Renewable Electric Generating Facilities One Megawatt or Greater Map



## APPENDIX B

### Perceived Impediments

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Section 4901:1-40-03(C), OAC, requires affected companies to submit a report annually that describes their non-binding compliance plans over a ten-year planning horizon. Included within this rule is a requirement to address perceived impediments to achieving compliance with the AEPS requirements and to suggest means for addressing such impediments.

Potential impediments listed in the 2011 compliance status reports included, but were not limited to, the following concerns:

- Potential future supply constraints, particularly related to in-state renewable energy resources and solar energy resources;
- Changes in Ohio law or Commission rules that may limit the supply of qualified resources;
- Compliance obligations based on historical sales volumes, which given customer migration, may require companies to “over-comply” relative to current sales base;
- Uncertainty associated with customer choice and variable sales volumes creates some unwillingness by Companies to enter longer-term contracts, while developers may prefer or require the longer-term contracts prior to proceeding with project development;
- Loss of financial incentives (state and federal) may constrain development of additional renewable energy resource facilities;
- Uncertainty regarding US EPA regulations impacting coal-fired generation and corresponding impacts on biomass co-firing;

In terms of addressing the perceived impediments, the following suggestions were offered by the companies:

- Greater regulatory certainty for cost recovery associated with longer-term commitments;
- If Ohio solar resources become constrained, the legislature may need to revisit this component.

**The Public Utilities Commission of Ohio**

**John R. Kasich, Governor  
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