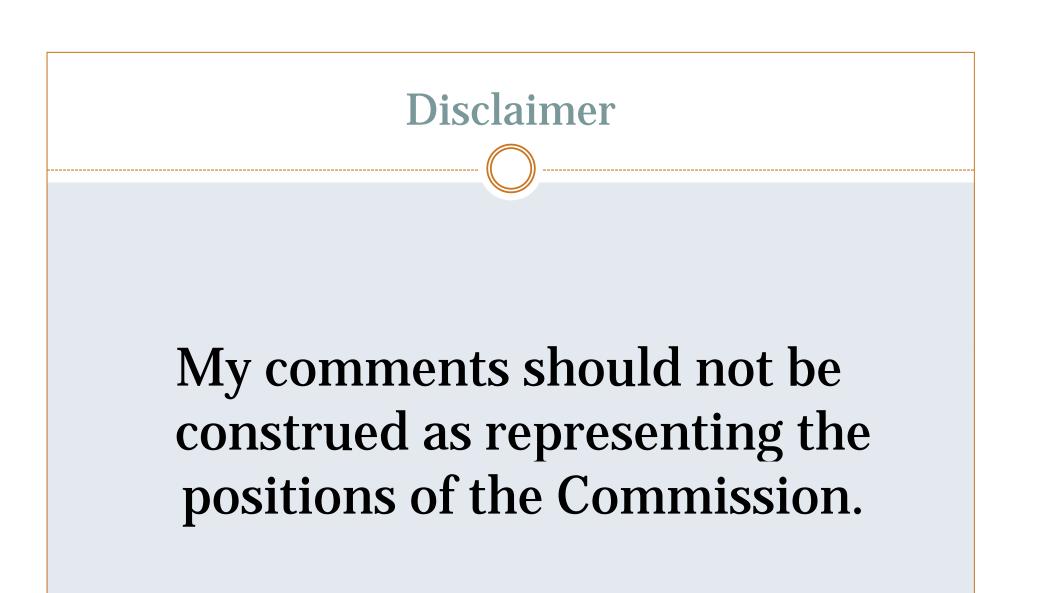
Ohio's alternative energy portfolio standard (AEPS)

UKRAINE / ARMENIA VISIT

OCTOBER 25, 2012 PUCO STAFF

STUART SIEGFRIED (STUART.SIEGFRIED@PUC.STATE.OH.US)

HTTP://WWW.PUCO.OHIO.GOV/

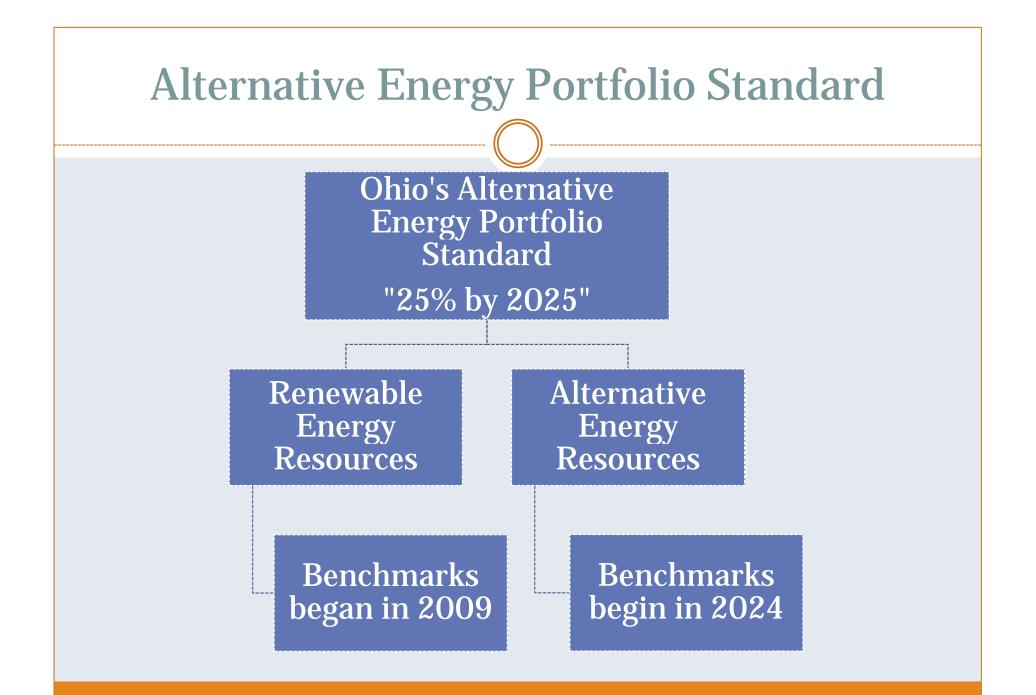




- Summary of PUCO's certification process for renewable energy resource electric generating facilities
- Compliance Status

Alternative Energy Portfolio Standard

- Alternative Energy Portfolio Standard (AEPS) came out of Senate Bill 221 – effective date of 7/31/2008
- The AEPS includes renewable energy resources (with specific solar carve-out) and advanced energy resources.
- "25% by 2025"
- Applies to Ohio electric distribution utilities and electric service companies



AEPS

- Compliance obligation is a function of Ohio electric retail sales (average of most recent 3 years)
- The AEPS includes specific annual benchmarks for renewable resources and solar, beginning in the year 2009 (with minimum in-state requirement)

	AEPS	
ly end of year	Renewable energy resources	Solar energy resources
2009	0.25%	0.004%
2010	0.50%	0.010%
2011	1%	0.030%
2012	1.5%	0.060%
2013	2%	0.090%
2014	2.5%	0.12%
2015	3.5%	0.15%
2016	4.5%	0.18%
2017	5.5%	0.22%
2018	6.5%	0.26%
2019	7.5%	0.3%
2020	8.5%	0.34%
2021	9.5%	0.38%
2022	10.5%	0.42%
2023	11.5%	0.46%
2024 and each o	alendar	
year thereafter	12.5%	0.5%

Source: ORC 4928.64(B)(2)

AEPS

NOTE: This document relies on projected sales numbers and is therefore subject to change. It should only be used as a general reference. Date: 4/16/12 (Version 2.0)

ESTIMATED QUANTIFICATION OF STATEWIDE COMPLIANCE OBLIGATIONS ASSOCIATED WITH RENEWABLE ENERGY COMPONENT OF THE ALTERNATIVE ENERGY PORTFOLIO STANDARD (ORC 4928.64)

							Non-Solar Renewables (MWHs)		Solar (MWHs)	
Renewab	Renewable Requirements per ORC 4928.64(B)		Year	Sales (MWHs)	Baseline (MWHs)	Totals	Ohio Minimum	Totals	Ohio Minimum	
	Total Non-Solar		2006	135,788,000	N/A	N/A	N/A	N/A	N/A	
	Renewable Solar Renewable		2007	143,358,000	N/A	N/A	N/A	N/A	N/A	
				2008	140,739,000	N/A	N/A	N/A	N/A	N/A
2009	0.250%	0.004%	0.246%	2009	128,938,000	139,961,667	344,305.70	172,152.85	5,598.47	2,799.23
2010	0.500%	0.010%	0.490%	2010	136,246,236	137,678,333	674,623.83	337,311.92	13,767.83	6,883.92
2011	1.000%	0.030%	0.970%	2011	139,959,631	135,307,745	1,312,485.13	656,242.56	40,592.32	20,296.16
2012	1.500%	0.060%	1.440%	2012	140,932,187	135,047,956	1,944,690.56	972,345.28	81,028.77	40,514.39
2013	2.000%	0.090%	1.910%	2013	141,904,743	139,046,018	2,655,778.94	1,327,889.47	125,141.42	62,570.71
2014	2.500%	0.120%	2.380%	2014	143,407,784	140,932,187	3,354,186.05	1,677,093.03	169,118.62	84,559.31
2015	3.500%	0.150%	3.350%	2015	144,910,825	142,081,571	4,759,732.64	2,379,866.32	213,122.36	106,561.18
2016	4.500%	0.180%	4.320%	2016	146,413,866	143,407,784	6,195,216.27	3,097,608.13	258,134.01	129,067.01
2017	5.500%	0.220%	5.280%	2017	147,828,492	144,910,825	7,651,291.56	3,825,645.78	318,803.82	159,401.91
2018	6.500%	0.260%	6.240%	2018	149,243,119	146,384,394	9,134,386.21	4,567,193.10	380,599.43	190,299.71
2019	7.500%	0.300%	7.200%	2019	147,474,836	147,828,492	10,643,651.45	5,321,825.72	443,485.48	221,742.74
2020	8.500%	0.340%	8.160%	2020	145,618,138	148,182,149	12,091,663.36	6,045,831.68	503,819.31	251,909.65
2021	9.500%	0.380%	9.120%	2021	143,584,612	147,445,364	13,447,017.23	6,723,508.61	560,292.38	280,146.19
2022	10.500%	0.420%	10.080%	2022	144,645,582	145,559,195	14,672,366.89	7,336,183.44	611,348.62	305,674.31
2023	11.500%	0.460%	11.040%	2023	145,706,552	144,616,111	15,965,618.62	7,982,809.31	665,234.11	332,617.05
2024	12.500%	0.500%	12.000%	2024	146,767,522	144,645,582	17,357,469.84	8,678,734.92	723,227.91	361,613.96
2025	12.500%	0.500%	12.000%	2025	147,828,492	145,706,552	17,484,786.24	8,742,393.12	728,532.76	364,266.38

Notes:

(1) The Sales (MWH) for 2006 to 2009 are actual figures. Sales beginning in 2010 are based on PUCO Staff projections, in accordance with ORC 4935.01(A), and are therefore subject to change

(2) The Sales (MWH) do not include sales attributed to municipals or co-ops, as they are not covered by the portfolio standard requirements.

(3) The Baseline (MWH) is computed as the average annual sales from the three prior calendar years (i.e., 2009 baseline = the average of 2006, 2007, and 2008 sales)

(4) The annual requirements (non-solar and solar) do not incorporate any impacts associated with force majeure determinations.

(5) The non-solar and solar requirements (MWHs) are based on projected sales volumes and will change as a function of actual sales.

(6) The "Non-Solar Renewables" requirement can be satisfied with any eligible renewable energy resources, including solar.

(7) The "Ohio Minimum" columns incorporate the 50% in-state requirement per ORC 4928.64(B)(3)

Questions concerning this document can be directed to Stuart Siegfried

Stuart.Siegfried@puc.state.oh.us

AEPS

• Alternative Compliance Payments (or ACPs)

- Assigned in the event of noncompliance
- Cannot be recovered from customers
- Separate ACP for solar and non-solar

• Force Majeure

- Can excuse compliance if good faith effort is demonstrated
- Has been used for solar in early years, especially in-state

Cost "Cap"

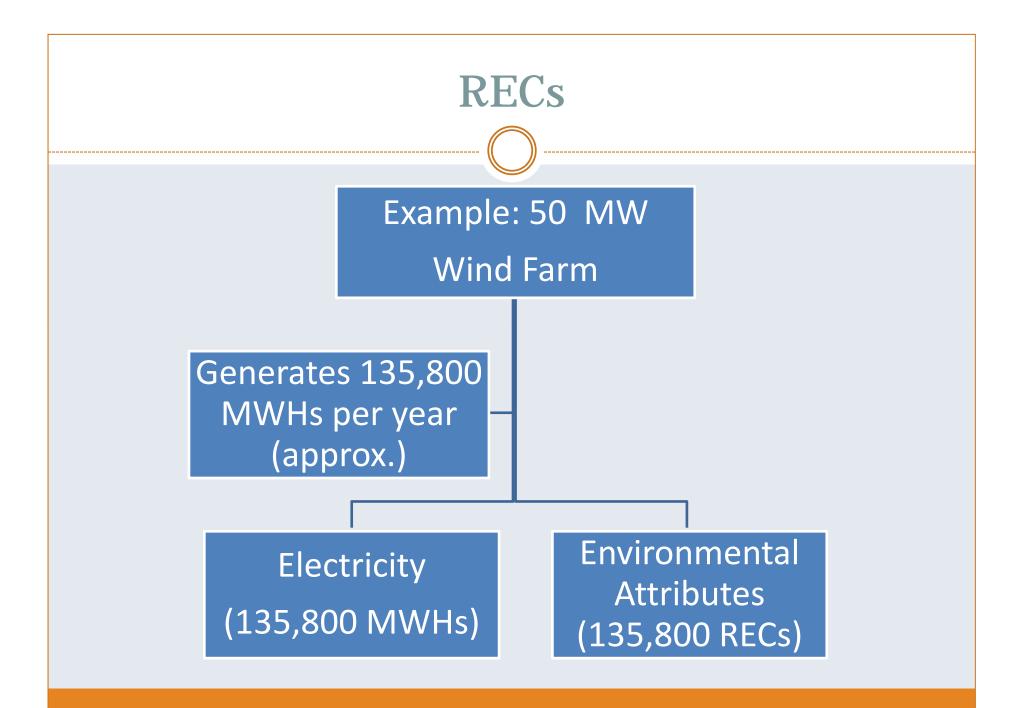
• Designed to limit the rate impacts of the AEPS

AEPS • Ohio Revised Code: 4928.64 & 4928.65 (statute) <u>http://codes.ohio.gov/orc/4928.64</u> <u>http://codes.ohio.gov/orc/4928.65</u> <u>http://codes.ohio.gov/orc/4928.01</u> (definitions)

• Ohio Administrative Code: 4901:1-40 (rule) http://codes.ohio.gov/oac/4901%3A1-40

Renewable Energy Credits

- Renewable Energy Credit ("REC") = the environmental attributes associated with one megawatt-hour (1,000 kilowatt-hours) of electricity generated by a renewable energy resource
- RECs can be bought, sold, traded, banked
- RECs do not have to remain with the associated electricity they can be "unbundled" and sold separately.



RECs

- RECs can only be used once. Unique identifier numbers. Retired for compliance purposes (removed from circulation).
- RECs are fundamental compliance tool for state's portfolio standard
- Tracked through system such as GATS or M-RETs, which create the RECs and act like an accounting system

PUCO Certification Process

- Established by OAC 4901:1-40-04(F)
- Only RECs from PUCO-certified facilities are viewed as viable compliance tools for compliance with renewable requirements of AEPS
- PUCO began certifying facilities in second half of 2009

Certification Process

- On-line application form
- No fee
- 60 day auto approval process (<u>but can deviate</u>)
- Fully transparent everything can be viewed on PUCO website

Certification Process

- Staff focus when reviewing the applications is on the following: (a) the resource or technology used at the facility, (b) the facility's placed in-service date, and (c) if the facility's electrical output is deliverable to the state of Ohio.
- Also looking at metering for facilities above 6 kW, a utility-grade meter is required (must comply with 2001 ANSI C12.1 standards)

Certification Process

 To date, we have received over 5,400 applications – many for smaller, residential solar facilities

• And we have certified approximately 5,200 facilities

http://www.puco.ohio.gov/puco/index.cfm/industryinformation/industry-topics/ohioe28099s-renewableand-advanced-energy-portfolio-standard/

Certified Facilities (as of 9/1/12)

Certified Renewable Energy Generating Facilities

Facilities Certified: 06/26/2009 - 09/01/2012

Renewable Generation Type	FAC	ILITIES CEF	RTIFIED	CAPACITY (megawatts)			
	Count	Ohio	Outside Ohio	Capacity	Ohio	Outside Ohio	
Solar Photovoltaic	5,060	812	4,248	164.33	59.67	104.66	
Wind	44	24	20	2,690.88	419.63	2,271.25	
Hydroelectric	3	1	2	123.09	1.09	122.00	
Solid Waste	3	2	1	97.80	42.80	55.00	
Abandoned Coal Mine Methane	1	1	-	49.00	49.00	-	
FuelCell	1	1	-	1.00	1.00	-	
Totals:	5,112	841	4,271	3,126.10	573.19	2,552.91	
Biomass/Biogas	Count	Ohio	Outside Ohio	Capacity	Ohio	Outside Ohio	
Landfill Gas	33	9	24	358.42	113.72	244.70	
Anaerobic Digestion	6	3	3	6.29	3.45	2.84	
Food Processing	3	3	-	2.51	2.51	-	
Other	1	1	-	0.81	0.81	-	
Wastewater Treatment	1	1	-	0.34	0.34	-	
Wood Waste	1	1	-	177.00	177.00	-	
Biomass/Biogas Totals:	45	18	27	545.36	297.83	247.53	
CoFired*	Count	Ohio	Outside Ohio	Capacity	Ohio	Outside Ohio	
Biomass	8	7	1	-	-	-	
Paper Manufacturing	4	3	1	-	-	-	
CoFired Totals:	12	10	2		4	-	
Grand Totals:	5,169	869	4,300	3,671.46	871.02	2,800.44	

* CoFired projects have been included in the number of facilities certifies but have been excluded from the megawatt capacity summary due to their variable nature





Compliance Status – 2009 & 2010

- Based on the companies' compliance filings, the 2009 non-solar renewable energy obligations were nearly fully satisfied. However, the solar requirements, and particularly the in-state solar requirement, proved challenging.
- Compliance performance in 2010 was again very high for the non-solar renewable energy component.
 Performance with the solar requirement, while still short of full compliance, indicated a significant improvement as additional solar generating facilities came on-line.

2009 Compliance Status (DRAFT)

	Non-S	Solar Rene	wables (M	WHs)	Solar Renewables (MWHs)			
	Total	In-State Total		In-State	Total	In-State	Total	In-State
Company	Required	Required	Obtained	Obtained	Required	Required	Obtained	Obtained
CEI	42,228	21,114	42,228	21,114	687	344	23	5
Columbus Southern	49,052	24,526	49,052	24,526	798	399	68	68
Dayton Power & Light	28,714	14,357	28,714	14,357	468	234	265	31
Duke Energy – Ohio	42,281	21,141	42,281	21,141	688	344	608	264
Ohio Edison	51,387	25,694	51,387	25,694	836	418	27	6
Ohio Power	63,242	31,621	63,242	31,621	1,028	514	95	82
Toledo Edison	22,314	11,157	22,314	11,157	363	182	11	2
CRES Providers	35,832	17,918	35,444	19,610	584	295	327	157
TOTALS	335,050	167,528	334,662	169,220	5,452	2,729	1,424	615

Source: Companies' annual compliance status report filings

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

2010 Compliance Status (DRAFT)

	Non-S	Solar Rene	wables (M	WHs)	Solar Renewables (MWHs)				
	Total	In-State	Total	In-State	Total	In-State	Total	In-State	
Company	Required	Required	Obtained	Obtained	Required	Required	Obtained	Obtained	
CEI	80,052	40,026	80,052	40,026	2,298	1,156	1,729	587	
Columbus Southern	95,847	47,923	95,847	47,923	2,687	1,343	2,687	1,343	
Dayton Power & Light	58,213	29,107	58,213	29,107	1,391	797	1,391	797	
Duke Energy – Ohio	49,502	24,751	49,502	24,751	1,090	585	1,090	585	
Ohio Edison	100,350	50,175	100,350	50,175	2,857	1,436	2,151	730	
Ohio Power	121,676	60,838	121,676	60,838	3,417	1,708	3,417	1,708	
Toledo Edison	42,551	21,276	42,551	21,276	1,220	614	918	312	
CRES Providers	65,027	33,515	64,809	34,555	1,536	777	1,401	672	
TOTALS	613,218	307,611	613,000	308,651	16,496	8,416	14,784	6,734	

Source: Companies' annual compliance status report filings

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.

4) The numbers in this table include any volumes carried forward to 2010 by virtue of 2009 *force majeure* decisions.

Compliance Activities

- Numerous compliance options available to companies
- Some of the activities that Ohio companies have pursued include:
 - Issuance of Requests for Proposals (RFPs)
 - Signing Power Purchase Agreements (PPAs)
 - **o** Use of Bilateral Negotiations
 - Participation in Auctions
 - **o** Utilization of REC Brokers
 - Self-Generation (i.e., DP&L's Yankee solar facility)
 - **o** Development of Residential REC Programs

Questions?

THE STAFF'S ALTERNATIVE ENERGY PORTFOLIO STANDARD TEAM CAN BE REACHED VIA EMAIL AT:

AEPS@PUC.STATE.OH.US