
IURC RM #11-05

**OUCR RESPONSE TO PRE-RULEMAKING COMMENTS ON VOLUNTARY
CLEAN ENERGY PORTFOLIO STANDARD PROGRAM PROPOSED RULE**

November 4, 2011

SUBMITTED BY

INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR

The Indiana Office of Utility Consumer Counselor, by counsel, submits the following written comments and attached documents in furtherance of the Commission's adoption of rules under Indiana Code § 4-22-1 to establish the Indiana voluntary clean energy portfolio standard program (Choice Program).

Existing Resources Should Not Count Toward the Overall Savings Goals.

During the October 14, 2011 Workshop, the OUCR discussed a spreadsheet it had prepared outlining the existing resources in the State of Indiana. As stated during the Workshop, the Commission has an opportunity to create a rule that would reflect the original legislative intent to add new clean energy resources to Indiana's generation fleet. While allowing existing resources to count toward goals would likely incent participation in the program, it would not necessarily result in meaningful participation, since the electric utilities in Indiana are already generating 4 - 9.6% of retail sales from existing clean energy. Also, there are enough sources of clean energy generated by others in Indiana to meet the shortfall of the participating electric suppliers. Counting existing resources toward the goal would likely not result in the change of behavior intended by the legislation for any of the participating electric suppliers.

The OUCC has attached two (2) demonstrative spreadsheets based upon different scenarios. Both scenarios include all existing resources in the state which would qualify in this program. For purposes of this calculation, existing resources were limited to those projects that have already been approved by the Commission, or are currently generating electricity.

Scenario One – Existing Resources, Including Pollution Control Technology

This scenario includes existing Indiana clean energy resources, as well as pollution control technology, as defined under Indiana Code § 8-1-37-4 through 17. As demonstrated by the spreadsheet, IOUs will have achieved the goals through the second goal period ending 2024, with the exception of Duke which will have achieved 97% of its goal. In the final goal period, IPL is the only utility that will meet its 10% goal. I&M and Vectren will be close at 94% and 93% respectively, while Duke and NIPSCO will achieve approximately 70% of their goals. Again, this is based upon the utilities relying on no more than existing resources. In the final goal period, collectively, the five (5) IOUs will be just 1.4 million clean energy credits short of meeting the 10% goal. However, there are approximately 3.5 million clean energy credits generated by other Indiana-based entities each year. These credits can be purchased to meet the shortfall. If existing resources are counted toward the goals, there would be no need to develop new generating resources in order to meet the goals of this program.

Scenario Two – Existing Resources, Excluding Pollution Control Technology

This scenario does not include pollution control technology as defined by Ind. Code § 8-1-37-4 -17, but does include the Duke Edwardsport IGCC generating station. Only NIPSCO will fail to meet the 4% goal in the first goal period. Even then, NIPSCO will have already achieved 99% of that 2018 goal. Both I&M and IPL will meet the second goal period requirements without any additional resources. In the final goal period, I&M and IPL will have nearly met the

10% requirement, and even NIPSCO, the worst performing utility, will have achieved 40% of the final goal. Again, this assumes the IOUs do no more than rely upon the resources they already have. The shortfall under this scenario will be approximately 2.6 million clean energy credits. But again, this shortfall can be met with existing clean energy resources within the state that are not already owned or operated by the participating electric suppliers.

The only statutory interpretation that gives meaning to the first goal period and some beyond, is if existing resources do not count toward the goals. One must assume the Indiana General Assembly intended for Goal Period One to have meaning. If it had intended to count existing resources, it could have just as easily acknowledged the current resources.

Energy Savings from Feed In Tariffs do not Constitute “Savings.”

The Indiana Energy Association (IEA) notes in its comments to the IURC regarding the measurement of credits from demand side management (DSM), net metering and feed in tariff production that, “the Statute provides that megawatt savings provided by DSM, net metering and feed in tariff initiatives count toward Clean Portfolio Standard Goal compliance...” The OUCC agrees the energy savings from DSM programs should count toward the goal, but does not agree with the assertion that feed in tariffs produce “savings.” Feed in tariffs result in a supply side resource that helps meet demand; it does not reduce demand, or otherwise produce “savings.” The Commission must ensure participating electricity suppliers do not confuse supply side resources with demand side resources when determining the accurate production and savings from these sources.

Furthermore, the IEA requests the Commission specifically delineate “those sources as clean energy resources that count toward the goal in 170 IAC 17-3-4(a)(1)(A) because of the potential for confusion about whether these sources constitute an amount of megawatt hours

acquired by the participating supplier.” This is unnecessary. The energy produced from these resources is measured in terms of megawatt hours. Electricity produced from feed in tariffs is designated as a clean energy resource pursuant to Ind. Code § 8-1-37-4(a)(19)(A) and (B). Similarly, demand side management is identified as a clean energy resource under Ind. Code § 8-1-37-4(a)(16).

The Commission’s Proposed Application Process Requests Reasonable Information from Participating Electricity Suppliers that is Necessary for Adequate Review.

The IEA stated in its comments that the program application requirements laid out in the strawman rule are “overly restrictive, complicate the decision as to whether to file an application, and requires overly complex and theoretical planning and compliance tools to demonstrate the ability to satisfy a particular clean energy goal.” The OUCC disagrees.

The application requirements set forth in the strawman rule include information necessary for the Commission to determine whether the electricity supplier has demonstrated a reasonable expectation of meeting the 2025 goal. The requirements do not impose any more additional planning than would have already been completed in preparing an integrated resource plan (IRP). As the Commission is aware, IRPs are prepared every two (2) years and are filed with the Commission by the utility. Therefore, any update to an IRP for the purpose of applying to this program requires minimal effort by the participating electricity supplier. Also, establishing minimum requirements in the application provide consistency among applicants and helps alleviate potential disputes regarding the completeness of an application.

In addition to the application requirements, the IEA also stated that “viability of various clean energy resources available to satisfy the goals will most certainly change over time.” The OUCC recognizes this likelihood, but the annual reporting requirement to the Commission

allows participating electric suppliers to make the necessary modifications to their plans over time in order to meet the goals.

Participating Electricity Suppliers Should Not Receive an Incentive Through a Periodic Rate Adjustment Prior to Achieving the Established Goal.

It is inappropriate to reward a participating electricity supplier for performance that has not yet occurred. The purpose of an incentive is to encourage desired behavior and to reward the achievement of pre-established goals. Rewarding a participating electricity supplier prior to achieving those goals sends the wrong message. While the IEA has agreed to refund the incentive if a goal was not met, this is not a satisfactory solution. At a minimum, should the Commission agree with this position, an immediate refund of any such incentive should be included as part of the participating electricity suppliers' next tracker filing for each goal period.

The Participating Electricity Supplier Maintains the Burden of Proof

The IEA argues that an affected party who challenges a participating electricity supplier's continued participation in the CHOICE program should carry the burden that the participating electricity supplier's rates are no longer just and reasonable. Ind. Code § 8-1-37-11(c)(3) requires the Commission to make a determination that "approving the application will not result in an increase to the retail rates and charges of the electricity supplier above what could reasonably be expected if the application were not approved." Ind. Code § 8-1-37-11 states "the electricity supplier that submitted the application . . . bears the burden of proving to the Commission that the application meets the requirements."

The participating electricity supplier maintains the burden of proof during the application process and this should remain as time goes on. The participating electricity supplier has access to the data that constitutes the best evidence to verify its charges are just and reasonable. It would be unfair to shift that burden to another party. At a minimum, if an electricity supplier's

continued participation in the CHOICE program is called into question, the electricity supplier should be required to make a prima facie showing that its participation in the program continues to meet the statutory requirements. The burden should not shift to any other party until the participating electricity supplier has met this burden.

The Commission Should Consider Establishing a Formula to Convert the Energy from a Clean Energy Resource into an Equivalent Megawatt Hour of Clean Energy.

The OUCC agrees with Covanta that establishing a conversion factor for steam to an equivalent megawatt hour of energy is appropriate. However, Covanta's proposed conversion factor for steam suggests "nine thousand pounds of steam generated by a single straight steam turbine shall equal one megawatt of electricity." The OUCC does not agree that this is the appropriate calculation.

First, steam is generated by a boiler, not a turbine. The conversion of an energy source (coal, gas, etc.) in a boiler must take into account the boiler efficiency. The calculations for the conversion of steam to electricity in a steam turbine will vary depending upon the efficiency of the turbine design. The turbine efficiency is also dependent upon the backpressure present at the steam turbine outlet, which could range from a vacuum (condensing turbine outlet) to a positive pressure. In addition, the generating plant, as a whole, has additional losses to be accounted for in converting an energy source (coal, gas, etc.) into electricity.

Electricity has a fixed thermal equivalent of 3,412 BTU/kilowatt hour (kWh). A pound of steam has no such fixed equivalent. The energy content (enthalpy, in BTU per pound of steam) varies depending upon the pressure and temperature of the steam. The theoretical energy available from a pound of steam is the difference between the enthalpy of the steam (h_g) and the

enthalpy of the condensed steam (h_f), which is called the heat of evaporation (h_{fg}) and may be derived from a steam table.¹

Covanta has proposed “nine thousand pounds of steam generated by a straight steam turbine shall equal one megawatt hour of electricity.” This is not an accurate measure.

Take, for example, two (2) separate steam sources:

- Steam at 50 psig and 300 deg F has an enthalpy of 1,181 BTU/lb steam and based upon the steam tables, h_{fg} would equal 912 BTU/lb steam.
- Steam at 1500 psig and 800 deg F has an enthalpy of 1,362 BTU/lb steam and based upon the steam tables, h_{fg} would equal 554 BTU/lb steam.

The theoretical formula for converting steam to the equivalent energy in a megawatt hour (mWh) would be constructed as follows:

$$3,412 \text{ BTU/kWh} \times 1000 \text{ kWh/mWh} = 3,412,000 \text{ BTU/mWh}$$

For steam at “x” psig and “y” deg F, h_{fg} may be found in a steam table and inserted in the following formula for converting steam to an equivalent mWh:

$$[3,412,000 \text{ BTU/mWh}] / [h_{fg}(\text{for steam at “x” psig and “y” deg F})\text{BTU/lb steam}] = \text{lb steam/mWh}$$

For steam at 50 psig and 300 deg F, h_{fg} is 912 BTU/lb steam:

$$[3,412,000 \text{ BTU/mWh}] / [912 \text{ BTU/lb steam}] = 3,741 \text{ lb steam/mWh}$$

For steam at 1500 psig and 800 deg F, h_{fg} is 554 BTU/lb steam

$$[3,412,000 \text{ BTU/mWh}] / [554 \text{ BTU/lb steam}] = 6,159 \text{ lb steam/mWh}$$

As demonstrated above, establishing the theoretical pounds of steam with energy equivalent to a megawatt hour is dependent on the factors of steam pressure and temperature, which determine the amount of energy (h_{fg}) derived from steam. While Covanta has proposed a

¹ Sample data from a steam table may be found at: <http://www.spiraxsarco.com/resources/steam-tables.asp>.

simple calculation, accuracy should be the overriding factor. The formula outlined above provides for a more reliable conversion and should be used in making any such calculation.

Conclusion

The OUCC provides these additional comments based upon those comments provided by the other parties. The OUCC's focus has been limited to those areas in which additional explanation was required, or in which there was significant disagreement among the parties. The OUCC appreciates the Commission's consideration of these comments and welcomes the opportunity to provide additional commentary, or to further clarify its position.

Respectfully Submitted,



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Goal Period	30%			Unrestricted									
	Clean Coal	Nuclear	FIT	Total	Wind	Hydro	DSM	Biomass	Coalbed Methane	Waste to Heat	Industrial Heat	total	Out of State
Duke	2,365,200			2,365,200	175,200	455,520	717,962					1,348,682	
I&M		10,812,906		10,812,906	438,000	155,578	438,220					1,031,798	11,009,130
IPL	7,200,000			7,205,149	544,872		282,413					827,285	359,160
NIPSCO	8,440,000			8,440,000	175,200	114,931	323,820					640,564	175,200
Vectren	3,012,144			3,012,144	140,160		125,420					293,051	
Other				0	2,369,317							223,205	138,233
												223,205	223,205
												43,800	3,538,584

Goal Period	Goal 4%	30%	Unrestricted	30% of 4% Goal	Total of Goal 1 Met Now	% to Goal	CECs Short of Goal	Banked CECs
Duke	1,435,925	2,365,200	1,348,682	430,777	1,779,460	124%	-343,535	343,535
I&M	876,440	10,812,906	1,031,798	262,932	1,294,730	148%	-418,290	418,290
IPL	564,825	7,205,149	827,285	169,448	996,732	176%	-431,907	431,907
NIPSCO	647,640	8,440,000	640,564	194,292	834,856	129%	-187,216	187,216
Vectren	250,840	3,012,144	293,051	75,252	368,303	147%	-117,463	117,463

Goal Period	Goal 7%	30%	Unrestricted	30% of 7% Goal	Total of Goal 2 Met Now	% to Goal	CECs Short of Goal	Banked CECs
Duke	2,512,868	2,365,200	1,348,682	753,861	2,446,078	97.3%	66,790	0
I&M	1,533,770	10,812,906	1,031,798	460,131	1,910,218	125%	-376,448	376,448
IPL	988,445	7,205,149	827,285	296,533	1,555,725	157%	-567,280	567,280
NIPSCO	1,133,370	8,440,000	640,564	340,011	1,167,791	103%	-34,421	0
Vectren	438,970	3,012,144	293,051	131,691	542,206	124%	-103,236	103,236

Goal Period	Goal 10%	30%	Unrestricted	30% of 10% Goal	Total of Goal 3 Met Now	% to Goal	CECs Short of Goal
Duke	3,589,812	2,365,200	1,348,682	1,076,944	2,425,626	68%	1,164,186
I&M	2,191,100	10,812,906	1,031,798	657,330	2,065,576	94%	125,524
IPL	1,412,064	7,205,149	827,285	423,619	1,818,184	129%	-406,121
NIPSCO	1,619,100	8,440,000	640,564	485,730	1,126,294	70%	492,806
Vectren	627,100	3,012,144	293,051	188,130	584,417	93%	42,683

NOTES:

*"Clean Energy Required for Goal" is the necessary percentage of clean energy that is to be obtained in order to achieve the CPS goal. While the goals outlined by Ind. Code § 8-1-37-1.2 are based upon a percentage of the total electricity obtained by a participating electricity supplier to meet the energy requirements of its Indiana retail electric customer during the base year, for purposes of this calculation total generation was used. Use of total generation results in a more conservative estimate. Use of actual figures (for example, removing off system sales) would result in an even greater "% of Goal Achieved."

*"Restricted Resources" are those identified by Ind. Code § 8-1-37-1.2(g) are those clean energy resources that are limited to no more than 30%. See Ind. Code § 9-1-37-4(a)(17-21). For purposes of these calculations, Clean Coal, Nuclear, and FIT resources were used. Together, these exceed the 30% threshold, so the maximum was used.

*"Eligible Unrestricted Resources Used" are those that are not limited by Ind. Code § 8-1-37-1.2(g). See Ind. Code § 9-1-37-4(a)(1-16).

*"Eligible Restricted Resources Used" are those that may not be used to satisfy more than 30% of a CPS Goal (See Ind. Code § 8-1-37-1.2(g)). For purposes of this calculation, this figure is the maximum 30% that may be used.

*Ind. Code § 8-1-37-1.2(b) requires at least 50% of clean energy originate from clean energy resources located in Indiana. The entire amount was used, as the 50% threshold is not met.

*"Existing Resources to meet Goal" is the sum of "Eligible Unrestricted Resources Used" and "Eligible Restricted Resources Used."

*% of Goal Achieved is "Existing Resources to Meet Goal" divided by "Clean Energy Required for Goal"

Goal Period	30%				Unrestricted							
	Clean Coal	Nuclear	FIT	Total	Wind	Hydro	DSM	Biomass	Coalbed Methane	Waste to Heat	Industrial Heat	Out of State
Duke	2,365,200			2,365,200	175,200	455,520	717,962					
I&M		10,812,906		10,812,906	438,000	155,578	438,220					
IPL			5,149	5,149	544,872		282,413					
NIPSCO				0	175,200	114,931	323,820	26,613				
Vectren				0	140,160		125,420	27,471				
Other				0	2,369,317			223,205	223,205	679,058	43,800	138,233

Goal Period	Goal 4%	30%	Unrestricted	30% of 4% Goal	Total of Goal 1 Met Now	% to Goal	CECs Short of Goal	Banked CECs
Duke	1,435,925	2,365,200	1,348,682	430,777	1,779,460	124%	-343,535	343,535
I&M	876,440	10,812,906	1,031,798	262,932	1,294,730	148%	-418,290	418,290
IPL	564,825	5,149	827,285	169,448	832,434	147%	-267,608	267,608
NIPSCO	647,640	0	640,564	194,292	640,564	99%	7,076	0
Vectren	250,840	0	293,051	75,252	293,051	117%	-42,211	42,211

Goal Period	Goal 7%	30%	Unrestricted	30% of 7% Goal	Total of Goal 2 Met Now	% to Goal	CECs Short of Goal	Banked CECs
Duke	2,512,868	2,365,200	1,348,682	753,861	2,446,078	97%	66,790	0
I&M	1,533,770	10,812,906	1,031,798	460,131	1,910,218	125%	-376,448	376,448
IPL	988,445	5,149	827,285	296,533	1,100,042	111%	-111,597	111,597
NIPSCO	1,133,370	0	640,564	340,011	640,564	57%	492,806	0
Vectren	438,970	0	293,051	131,691	335,263	76%	103,707	0

Goal Period	Goal 10%	30%	Unrestricted	30% of 10% Goal	Total of Goal 3 Met Now	% to Goal	CECs Short of Goal
Duke	3,589,812	2,365,200	1,348,682	1,076,944	2,425,636	68%	1,164,186
I&M	2,191,100	10,812,906	1,031,798	657,330	2,065,576	94%	125,524
IPL	1,412,064	5,149	827,285	423,619	1,362,501	96%	49,562
NIPSCO	1,619,100	0	640,564	485,730	640,564	40%	978,536
Vectren	627,100	0	293,051	188,130	293,051	47%	334,049

NOTES:

**"Clean Energy Required for Goal" is the necessary percentage of clean energy that is to be obtained in order to achieve the CPS goal. While the goals outlined by Ind. Code § 8-1-37-12 are based upon a percentage of the total electricity obtained by a participating electricity supplier to meet the energy requirements of its Indiana retail electric customer during the base year, for purposes of this calculation total generation was used. Use of total generation results in a more conservative estimate. Use of actual figures (for example, removing off system sales) would result in an even greater "% of Goal Achieved."

**"Restricted Resources" are those identified by Ind. Code § 8-1-37-12(g) are those clean energy resources that are limited to no more than 30%. See Ind. Code § 9-1-37-4(a)(17-21). For purposes of these calculations, Clean Coal, Nuclear, and FIT resources were used. Together, these exceed the 30% threshold, so the maximum was used.

**"Eligible Unrestricted Resources Used" are those that are not limited by Ind. Code § 8-1-37-12(g). See Ind. Code § 9-1-37-4(a)(1-16).

**"Eligible Restricted Resources Used" are those that may not be used to satisfy more than 30% of a CPS Goal (See Ind. Code § 8-1-37-12(g)). For purposes of this calculation, this figure is the maximum 30% that may be used.

*Ind. Code § 8-1-37-12(b) requires at least 50% of clean energy originate from clean energy resources located in Indiana. The entire amount was used, as the 50% threshold is not met.

**"Existing Resources to meet Goal" is the sum of "Eligible Unrestricted Resources Used" and "Eligible Restricted Resources Used."

*% of Goal Achieved is "Existing Resources to Meet Goal" divided by "Clean Energy Required for Goal"