



To: Public Service Commission of Wisconsin
From: Bill Skewes, Executive Director
Wisconsin Utilities Association
Re: Joint Utility Responses to Docket 05-EI-148
Date: February 17, 2009

On behalf of Wisconsin's investor-owned gas and electric utilities, the Wisconsin Utilities Association (WUA) provides the following responses to most of the questions posed in the Commission's notice of investigation pursuant to Docket 05-EI-148.

Costs of Producing Electricity from Renewable Resources

3. What might it cost the typical customer of a Wisconsin electric utility to construct/install a new renewable energy system using each of the following technologies? What might the typical customer's lifetime operation and maintenance costs be? Please be explicit about sources of data, assumptions, and how costs might vary based on system size, location, or other variables.

- a. Solar Photovoltaics (PV)
- b. Wind
- c. Landfill Gas
- d. Biogas other than Landfill Gas
- e. Biomass
- f. Hydroelectric
- g. Any other renewable electricity technologies for which data are available

4. How much energy (in kilowatt-hours (kWh)) will be produced over the useful life of a typical customer-owned renewable energy system in Wisconsin using each of the following technologies? Please be explicit about sources of data, assumptions, and how production might vary based on system size, location, or other variables.

- a. Solar
- b. Wind
- c. Landfill Gas
- d. Biogas other than Landfill Gas
- e. Biomass
- f. Hydroelectric
- g. Any other renewable electricity technologies for which data are available

Response to 3 and 4: It is very difficult to provide cost estimates and output estimates for a “typical” customer. The utilities have found there is not a “typical” customer when it comes to customer-owned renewable energy technologies; so much of the cost and facility characteristics are site, technology, and size specific. Each customer, whether residential or business, varies by size, the way it uses electricity, the amount of electricity it uses and the goals it is trying to achieve with the installation of renewable technologies. Further, the costs of the customer-owned systems to the individual customer are not typically shared with, or required to be provided, to the utility. The utilities require only information necessary for the safe interconnection of the systems.

However, many of the customers with these renewable energy systems have participated in the Focus on Energy’s (FOE) cash back rewards program. Therefore, the PSCW may want to utilize FOE’s renewable energy yellow pages to help provide information on products and services that can help identify these costs:

<http://www.focusonenergy.com/Resources/Yellow-Pages-Search.aspx>.

In addition, both the Energy Center of Wisconsin and FOE have reference materials on existing renewable energy demonstration and installation efforts. The webpage for the Energy Center of Wisconsin follows: <http://www.ecw.org/index.php>. Over the past couple of years, the Wisconsin Distributed Resources Collaborative (WIDRC) has also spent a great deal of time researching possible mechanisms for implementing the concept of ARTs. WIDRC is a coalition of parties that are interested in looking at ways to remove barriers to the installation of distributed resources. The WIDRC coalition has a substantial amount of historical information regarding what other states or countries have done regarding ARTs. The following is a link to WIDRC’s Tariff Committee webpage for more information on ARTS: <http://www.wisconsinidr.org/workinggroups.htm>.

5. What should the goals and objectives of an ART policy be?
 - a. What would you consider to be the primary purpose of an ART policy? Is the primary purpose to accelerate renewable energy installations, lower the cost of renewable energy, help utilities meet renewable portfolio standard (RPS) obligations, increase the diversity of installed renewables, reduce greenhouse gas emissions, or something else?
 - b. Considering the primary purpose of the ART policy, what short- and long-term goals might be appropriate? In other words, how should the success of an ART policy be measured?
 - c. Should the Commission establish ARTs for all electric utilities regulated by the Commission, all investor-owned utilities or all Class A utilities? Why or why not?
 - d. What role, if any, should small, customer-owned renewables play in helping utilities meet RPS obligations? Should utilities seek to meet RPS obligations at the lowest possible price, or should other factors be considered? What ART structure would best complement an RPS?
 - e. What role, if any, should small, customer-owned renewables play in helping utilities reduce greenhouse gases? Should utilities seek to reduce greenhouse gases at the lowest possible price, or should other factors be considered? What ART structure would best incentivize the reduction of greenhouse gases?

Response: ARTs are but one of many tools that utilities may consider when trying to achieve renewable energy objectives, greenhouse gas reductions, or both under either mandatory or voluntary structures. They can be an equally useful tool for the Commission to consider meeting similar objectives. The effectiveness of an ART will depend on the specific objectives that are trying to be achieved. The goals and objectives of an ART are dependent on the policy objectives laid out in the question asked. A policy objective may be to identify and evaluate technical and economic opportunities and barriers related to the deployment of small-scale customer owned renewable generation in Wisconsin within the context of Act 141's public benefits and RPS provisions. A secondary objective may be to provide educational and demonstration projects that allow suppliers and utilities to "work out" technical and operational issues.

The policy objective may be to encourage small customer-owned renewable energy systems. It might be to diversify the renewable portfolio in the State of Wisconsin. It might be to reduce greenhouse gases. Most likely it will be some combination of these and other policies. ARTs by themselves will not accomplish any of these objectives. But they are a tool that utilities and the Commission may consider in trying to balance the various costs, risks, technical innovation, reliability and other factors identified above.

The Final Report of the Governor's Task Force on Global Warming identified ARTs as an enabling policy to an Enhanced RPS. As an enabling policy, ARTs are not expected to reduce greenhouse gases directly. Instead they enable in two ways. First, they may expand the development of smaller scale projects. And second, these smaller scale projects may be necessary given the very significant scale of new renewable technology deployment that would be necessary to meet the proposed Enhanced RPS. The Report also noted, consistent with balancing the various factors identified above, the need to "pay particular attention to measures that will lessen the burden of addressing climate change on consumers, and on energy-intensive industries like paper production that operate in highly competitive global environments, while providing essential jobs and other benefits to their communities".

6. What are desirable and appropriate design structures?
 - a. Should the ART directly target new capacity and new generation?
 - b. How can ART payment levels be structured such that producers are not undercompensated or overcompensated over the duration of the contract?
 - c. Is long-term forecasting of renewable technology economics reliable enough to offer price guarantees? How should long-term forecasting affect ART structures?
 - d. How should the availability of financial incentives for renewable technologies through the Focus on Energy program and voluntary utility programs affect decisions regarding ART payment amounts?

Response: Desirable and appropriate must flow directly from the goals and objectives. As discussed above, the objectives will need to be balanced in determining an appropriate design structure. For example, a focus on new capacity and new generation must be balanced against the costs and risks to ratepayers, the reliability of the electric distribution system, etc. How much producers must be compensated to incent them to add new customer-owned renewable energy systems will differ based on the objectives of the individual producers. Some producers derive value they can use directly in their own businesses (e.g. branding

themselves as green producers). Other producers may be looking to reduce energy cost volatility by installing a system with relatively fixed costs. Others will have a combination of individual or business objectives. Further, what is appropriate will differ whether the ART is being used by a utility as a tool to help meet its RPS obligation or to supply customer-owned distributed renewable energy to a voluntary green energy program. In the former, the ART must be able to cost-effectively supply energy that will be paid for by all customers. In the latter, the ART can be structured to supply energy to meet the needs of a smaller group of customers that voluntarily agreed to pay more to purchase renewable energy. Ultimately, it is the utilities' customers – the ratepayers – that bear the costs and benefits of any ART program. For that reason, this is a question that cannot be fully answered until the goals and objectives have been clearly defined.

7. Other Policy Questions

- a. Are there any legal issues which constrain the Commission's ability to develop and implement an ART policy?
- b. What effects might ARTs have on jobs, fossil fuel imports, and agriculture?
- c. Should utilities allow customers to voluntarily choose to purchase electricity generated from a specific technology (e.g., solar PV)?

There are legal issues that the Commission should take into account in pursuing the development and implementation of an Advanced Renewable Tariff policy.

First, the Commission should determine the extent to which it will be modifying its findings and conclusions from past orders, including orders approving pilot customer generation buyback tariffs of individual utilities, and past generic orders that the Commission has issued establishing general buyback tariff policies. These orders include a number of conclusions and directives that are relevant, if not critical, to the current initiative, including the requirements that (1) electric utility purchases be priced at varying full avoided short-and long-term marginal energy costs, (2) utilities provide compensation for 75% of the capacity value for the customer-owned generation, and (3) utilities make net metering available for customer-owned generation facilities rated at 20 kW or less.¹ In particular, the Commission's 1983 Generic Order included specific decisions on avoided cost calculations, incorporating planning pool considerations, the definitions of excess capacity given the applicable 15 % planning reserve margin in effect at the time, and other issues. These directives in past orders have been in force and effect for over 20 years, and should be revisited as part of the current initiative.

¹ See e.g., Investigation on the Implementation of Cogeneration and Small Power Production Rates and Rules, Pursuant to the Federal Energy Regulatory Commission's Rules Regarding Sections 201 and 210 of the Public Utility Regulatory Policies Act of 1978, PSCW Docket No. 05-ER-11; Investigation on the Commission's Own Motion to Develop a Buy-Back Tariff for Cogeneration and Small Power Producers of Madison Gas and Electric Company, Wisconsin Electric Company, Wisconsin Power and Light Company, and Wisconsin Public Service Corporation, Pursuant to the Commission's April 1982 Report in Docket 05-ER-11, PSCW Docket No. 05-ER-12; Investigation on the Commission's Own Motion to Develop a Buy-Back Tariff for Cogeneration and Small Power Producers of Northern States Power Company, Lake Superior District Power Company, and Superior Water, Light and Power Company Pursuant to the Commission's April 1982 Report in Docket 05-ER-11, PSCW Docket No. 05-ER-13, Omnibus Order Issued, June 21, 1983 (1983 Generic Order). The net metering requirement was addressed in a January 28, 1982 Letter Order issued by the Commission.

The Commission should also be mindful of the FERC rules governing utility purchases from qualifying facilities (QFs) under the Public Utility Regulatory Policies Act (PURPA).² Those rules have their own directives concerning interconnections and avoided cost calculations.

The Commission should also take into consideration the amendments to PURPA that were enacted as part of the federal Energy Policy Act of 2005. Specifically, those PURPA amendments eliminated the requirement that a utility enter into new mandatory purchase obligations with a QF upon a showing that the QF has non-discriminatory access to the competitive wholesale power markets. Within the MISO footprint, the FERC has established a rebuttable presumption that a QF with a net capacity of 20 MW or more has nondiscriminatory access to the MISO markets.³ In a practical sense, a generation facility of 5 MW or more probably has such access.

The Commission must be mindful of the limitations on its authority to compel certain renewable energy purchases. Under 2005 Act 141, the Commission may not require an electric utility to purchase renewable energy if the utility is in compliance with its renewable portfolio standard requirements.⁴

Finally, many of the WI utilities already provide customers with the option to voluntarily pay a premium to support renewable generation. None of the WI utilities and few in the country have gone the next step of further limiting the optional purchase to a particular technology. Prior to offering technology specific rates, the utilities would need to perform market research to understand and verify customer interest in technology specific rate offerings. In addition, the utilities would need to understand the costs and ability to implement the voluntary rates and whether offering the generation specific rate could be done without harming other customers. Technology specific rates would seem to potentially be applicable for newer, higher cost small generation technologies and not be applicable for larger generation facilities such as base load units.

8. Overall Tariff Structure

- a. Should ARTs offer a fixed price (e.g., 100/kWh), a fixed premium (e.g., 40/kWh above the locational Marginal Price), a hybrid of the two structures, or some other structure?
- b. How might an ART be designed to incorporate components of both a fixed price structure and a fixed premium structure?
- c. Should customers be able to choose between a fixed rate and a fixed premium when signing an ART contract?

9. Program Size Limitations

- a. Should the Commission limit the total program size of all ART offerings for the state as a whole, for individual utilities, and/or for specific technologies? If so, why?

² These rules are generally found in 18 C.F.R. §§. 292.301, *et seq.*

³ 18 C.F. R. s. 292.309 (d) and (e).

⁴ See, s. 196.025 (1) (c) and s. 196.378 (4m), Wis. Stats.

- b. If the Commission limits total program size, what should the basis be for such limits? Should limits on ARTs be based on participation levels, installed capacity, actual generation, RPS obligations, costs, or something else? Should limits on ARTs be fixed amounts or proportional to total capacity, generation, costs, etc.?
- c. If program size limits are imposed, should enrollment be on a "first come, first served" basis or based on some other criteria?

10. Covered Renewable Energy Technologies

- a. Are there any specific technologies for which all utilities should be required to offer an ART?
- b. On what basis should the Commission decide whether it is appropriate to offer an ART for a given technology?
- c. Should the ART be technology-specific or apply to a generic definition of renewables?

11. Individual Project Size Limitations

- a. What project size limits, if any, are appropriate for each technology, and why?
- b. Should project size limits be uniform across utilities?

12. Contract Duration

- a. Should utilities offer the same duration for all ART contracts regardless of the technology?
- b. What is the optimum duration for ART contracts and why?

Response to 8-12: As has been discussed in response to several of the previous questions, the design components of an ART will be directly related to the specific policy objectives adopted. The details of tariff structures, program size limitations, covered technologies, project size limitations and contract duration can and appropriately should vary to meet the specific policy objective. Whether the objective is help meet an RPS mandate, achieve a certain level of small customer-owned renewable energy projects, or supply a local distributed resource to for a voluntary green energy program, the detailed design components will all need to be tailored to each unique objective. There are two general principles that should be considered in all cases, though. Utilities and the Commission must strive to keep the ART design simple and easy for potential customer participants to understand. And, they must use care in designing programs to minimize opportunities for manipulation or unintended consequences.

13. Cost Recovery

- a. Why and under what circumstances might it be appropriate for ART costs to be recovered through ordinary rates paid by all customers or a class of customers? For purposes of answering this question, assume "ART costs" means all costs arising from the administration of the ART.

Response to 13: The appropriate method for cost recovery is tied to the policy objective of the ART. If the ART is one of the tools used to help a utility meet its RPS or other mandated renewable energy requirements, then it would be appropriate for the ART costs to be recovered through ordinary rates. RPS requirements apply to a utility's overall supply mix

and the benefits (and costs) accrue to all customers. Consequently it is appropriate for ART costs in this circumstance to be spread across all customers. Under a voluntary renewable energy program, the direct renewable and environmental attributes typically accrue only to the program participants. If the ART is one of the tools a utility uses to supply renewable energy to its voluntary renewable energy program, then it would be appropriate for the ART costs to be recovered only from those customers that choose to participate in the program.

Outside groups that offer third party certification to voluntary programs require a bright line separation between energy used to meet regulatory mandates and energy used to supply voluntary programs. Energy used to supply a voluntary program cannot be used to simultaneously meet a mandate (i.e. double counting is not allowed). Wisconsin law on the other hand does allow for double counting. While not all of the Wisconsin utilities have sought third party certification of their voluntary programs, all currently have a clear separation between RPS and voluntary programs. Given the current provisions in Wisconsin law, however, it is appropriate for the Commission to allow utilities discretion to choose the best means of cost recovery as both RPS requirements and voluntary programs evolve over time.

14. Renewable Environmental Attributes

a. Should ownership of associated renewable and environmental attributes (such as Renewable Energy Credits or greenhouse gas offsets) be consistent across all ARTs in Wisconsin?

To clarify, it is assumed the attributes referred to in this question exclude Renewable Resource Credits (RRCs) which are unique to Wisconsin and can only be owned and traded by Wisconsin electric providers.

If the entity purchasing the energy thru an ART is paying a premium for the energy over that of a standard energy tariff, then the attribute should transfer to the purchaser. If an ART is being used as the primary tool or instrument to incentivize renewable energy development and meet renewable energy targets in lieu of an RPS, then yes, attributes should be treated consistently across all ARTs in Wisconsin. If ARTs are implemented as a secondary tool for renewable energy development then consistency may be of less importance, however if the attributes do not transfer to the purchaser this should be reflected in the price.

b. Should ARTs be established with separate prices depending on which party owns the renewable and environmental attributes?

Yes, current programs have established different prices depending on which party owns the renewable and environmental attributes. Without separate pricing, an ART program would lose its role as a tool to incentivize development of renewable energy generation. Currently, all Wisconsin electric utilities offer a standard energy purchase tariff which establishes a price the utility will pay for electricity generated within their service territory. These tariffs do not include the purchase of renewable and environmental attributes.

For those experimental ARTs which have been implemented, a price has been established that offers a premium over the utility's standard energy purchase tariff. This premium pays for the transfer of ownership of the associated renewable and environmental attributes to the entity purchasing the energy. An ART without a premium is the same as a standard energy purchase tariff, and would likely not fulfill the goal of incentivizing renewable energy development. In other words, there would be no benefit to the industry to establish an ART that does not have separate pricing, and does not transfer ownership of the renewable and environmental attributes to the purchaser.

15. Basis for Setting Tariff Price

- a. For a given technology, should there be any differentiation in ART prices based on design characteristics (e.g. vertical versus horizontal axis wind turbines), fuel source (e.g. biomass crops versus wood waste), or location (e.g. terrestrial versus offshore wind)?

ART pricing should support the strategic purpose and balance of the program. The pricing design should consider the complexity of administration for the ART program, since increased billing parameters and granularity in measurement can increase costs of billing administration. Pricing should consider simplification where possible in order to limit customer confusion and avoid discouraging participation.

Separate prices for particular design characteristics can be helpful if the ART program goal is to encourage various types of renewable generation resource. Conversely, a more standardized approach will likely encourage the most economically efficient resource to surface as the preferred technology solution for the standardized grouping of resources.

- b. For a given technology, should ART prices decline as project size increases? If so, should size bands be created or should the price decline in linear proportion to size? How might the Commission decide on appropriate size bands?

The pricing of generation resources under an ART program should align with the underlying methods used to establish the pricing. For example, if a price level was established by determining a reasonable payback for a very small resource, in many cases it would be inappropriate to offer the same pricing to a larger installation that may be able to recognize economies of scale savings. Alternatively, if the price is a premium representing a value for renewable attributes as considered in question 8, then price differentiation by size may be less of a concern.

- c. Should ART payment levels include any form of a capacity payment in addition to energy payments? Does your answer vary by technology? Could an auction or tender-based system for renewable capacity payments help increase economic efficiency and/or reduce risk on behalf of the investor?

Response: The answer for this question is dependent on how the ART pricing is designed. If ART pricing is designed to compensate based on a break-even level for the generation

investment, then it would not be appropriate to offer any fixed payments or capacity payments to the seller. Under this typical design, energy payments should be established to recover both fixed and variable costs, thereby providing incentive to maximize production from the facility. To the extent that the facility can be used to meet the utility's capacity obligations, the utility should be entitled to that capacity without further payment.

- d. Should ART prices be set at a level such that a typical participating customer will earn a positive return on their investment in renewable energy? If so, what might be an appropriate return?

Response: It is unlikely the utilities would receive proposals for any projects under an ART that did not offer full cost recovery. However, an ART that requires a long-term contract at a known price (and is sometimes coupled with a utility purchase obligation) provides relatively low risk investment for most developers. This question is answered in further detail in question 6.

- e. Should utilities offer separate prices for on-peak and off-peak generation or a single blended ART price? Should the utility or the customer be allowed to decide on their preferred approach?

Response: The application of peak-period pricing varies by technology and ART program design. On-peak and off-peak pricing provides an incentive for customers to efficiently operate their renewable generation and encourages maintenance down-time during off-peak periods. For solar, this is not as critical, since the technology has a more predictable time-of-day output

- f. Should ART contracts include an automatic adjustment in the price based on inflation?

Response: No. Under most ART proposals, the pricing is designed to enhance the economic break-even for an ART generation resource based on a specific investment scenario. These programs are designed so that the pricing remained unchanged, and service under the tariff would transition to a standard buyback tariff energy prices that reflect inflation over time (also known as a "feed-in" tariff). An inflation factor would defeat the ability of these tariffs to function as a feed-in tariff. Furthermore, it is problematic to implement automatic adjustments to rate levels due to regulatory limitations. It would be more appropriate to evaluate the pricing levels within the context of a regulatory proceeding.

- g. If the Commission does not require utilities to offer uniform contract duration for all ARTS, should utilities offer different prices for different contract durations?

Response: Contract terms and conditions should be evaluated in the broader scope of the structure of the specific ART program. Assuming there is no requirement for standardized contract lengths and the ART program designs are similar in nature, ARTs should be uniformly designed with similar pricing methodologies for all utilities.

- h. If any fixed premium ARTs are established should the premium be over and above the Locational Marginal Price, or should it be tied to some other number? Since a fixed premium would result in a variable price, should there be a price cap or other measure to prevent unacceptable profits or losses?

Response: Fixed premium ART design is answered in more detail in question 8. Hourly LMP pricing is not currently used for standard retail parallel generation tariffs, so it does not seem to make sense to add this complication to renewable incentive program. If an ART program intends to provide incentive to investment in renewable resources, then the volatility of LMP prices will discourage investment and make it difficult for customers to find financing commitments for their ART resource. The administration costs would significantly increase for hourly load reconciliation, and would be less cost effective in consideration of the size of resources considered in ART programs.

- i. Should ART prices be automatically reduced annually (or periodically) to reflect the maturation of technologies and the need for renewables to become cost competitive without price supports (degression)?

Response: No. It seems appropriate to revisit pricing parameters as market costs and participation change. These changes may mean closing existing ART options to subsequent installations or reducing the pricing levels if the technologies become more cost competitive without pricing supports. Please refer to response 6 for related information.

- j. Are there any benefits to customers unrelated to electricity generation that should be reflected in the tariff prices?

Many ART tariffs are developed to consider the cost of investment rather than reflecting the generation output and renewable attributes value. ART tariffs with fixed compensation levels per output unit establish increased pricing stability. Potential resource owners have more certainty in a fixed output price that is guaranteed for a contracted time period. This pricing structure helps to encourage investment and help potential owners find financing.

16. Other

a. Are there any other ART design considerations that you feel the Commission should consider?

ARTs are usually implemented as an alternative to a renewable portfolio standard (RPS) to help incentivize the development of renewable electric generation. In general, ARTs often encourage smaller customer owned renewable electric generation, which can be less economical than producing renewable energy from a larger facility which is typically the case in a utility's RPS compliance strategy. These added costs are borne by all electric customers.

Wisconsin already has a renewable portfolio standard as well as provides financial incentives for small, customer owned renewable electric generation equipment. Therefore, an ART is seen as a duplicative and less economically attractive measure over that of an RPS. The utilities therefore do not support implementation of both an ART and an RPS except when ARTs are voluntarily implemented by a utility.