Exhibit No.:	_____
Issue(s):	RES Retail Rate Impact Calculation Policy, Overview
Witness:	Ezra D. Hausman, Ph.D.
Type of Exhibit:	Rebuttal Testimony
Sponsoring Party:	Missouri Solar Energy Industries Assn.
Case No:	ET-2014-0059
Date:	September 16, 2013

MISSOURI PUBLIC SERVICE COMMISSION

File No. ET-2014-0059

REBUTTAL TESTIMONY

OF

EZRA D. HAUSMAN, PH.D.

ON BEHALF OF

THE MISSOURI SOLAR ENERGY INDUSTRIES ASSOCIATION

Cambridge, Massachusetts
September 2013

Table of Contents

EXHIBITS

REBUTTAL TESTIMONY

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EZRA D. HAUSMAN, PH.D.

Case No. ET-2014-0059

1. INTRODUCTION AND QUALIFICATIONS

Q: Please state your name, title and business address.

A: My name is Ezra D. Hausman, Ph.D., and I am Vice President and Chief Operating Officer of Synapse Energy Economics ("Synapse"), located at 485 Massachusetts Avenue, Cambridge, Massachusetts, 02139.

Q: Please describe Synapse Energy Economics.

A: Synapse Energy Economics is a research and consulting firm specializing in energy and environmental issues, including electric generation, transmission and distribution system reliability, ratemaking and rate design, electric industry restructuring and market power, electricity market prices, stranded costs, efficiency, renewable energy, environmental quality, and nuclear power.

Synapse's clients include state consumer advocates, public utilities commission staff, attorneys general, environmental organizations, federal government agencies, and utilities. A complete description of Synapse is available at our website, www.synapse-energy.com.

Q: Please summarize your relevant work experience and your educational background.

A: I have been employed by Synapse since July of 2005, and I have served as vice president of Synapse since July 2009. While employed at Synapse I have provided expert analysis and testimony in numerous cases involving electricity, generating capacity, and ancillary service markets, electricity price forecasting, resource planning, environmental compliance, and economic analysis. I have prepared reports on these and other related topics for clients including federal and

state agencies; offices of consumer advocate; legislative bodies; cities and towns; non-governmental organizations; foundations; industry associations; and resource developers. I have also facilitated and served as an expert analyst for state-level stakeholder and legislative processes related to electricity resource planning and mitigation of greenhouse gas emissions.

From 1997 until 2005, I was employed as a Senior Associate with Tabors Caramanis & Associates (TCA), now part of CRA International, performing a wide range of electricity market and economic analyses and price forecast modeling studies. These included asset valuation studies, market transition cost/benefit studies, market power analyses, and litigation support. I have extensive personal experience with market simulation, production cost modeling, and resource planning methodologies and software.

I hold a B.A. from Wesleyan University, an M.S. in civil engineering from Tufts University, an S.M. in applied physics from Harvard University and a Ph.D. in atmospheric chemistry from Harvard University.

A copy of my current resume is attached as Exhibit EDH-1 to this testimony.

Q: On whose behalf are you appearing in this proceeding?

A: I am appearing on behalf of the Missouri Solar Energy Industries Association (MOSEIA).

Q: Have you testified previously before the Public Service Commissions in the State of Missouri or elsewhere?

A: I have not presented testimony before the Public Service Commission of Missouri; however, I served as an expert participant in a stakeholder process sponsored by the Missouri Commission under Docket No. EW-2010-0187 in 2010.

I have presented expert testimony before commissions in the states of Arkansas, Iowa, Kansas, Mississippi, Nevada, New Hampshire, South Dakota, Vermont, and

Washington. I have also testified before state regulatory and/or legislative bodies in Illinois, Massachusetts, and Vermont, and I have served on an expert technical panel before the Federal Energy Regulatory Commissions. Further details are provided in Exhibit EDH-1.

Q: What is the purpose of your rebuttal testimony?

A: I am rebutting the testimony of KCP&L witnesses Burton L. Crawford and Tim M. Rush. Specifically, I am addressing the following issues:

1. Cost accounting for solar rebates;
2. Appropriate treatment of the Ensign PPA with respect to the 1% Retail Rate Impact ("RRI") limitation; and
3. Appropriate consideration of future wind projects and their impact on funds available for solar rebates today.

Q: What are your overall conclusions?

A: I conclude that:

1. Witnesses Rush and Crawford have overstated the cost of solar rebates by accounting for them as cash outlays, whereas a more appropriate treatment in this case would be to amortize them over the life of the resource;
2. Witness Crawford and the company correctly treat the Ensign PPA as an "existing resource" and include it in the non-renewable portfolio, as this resource was not selected for the primary purpose of meeting RES requirements;
3. It is premature, overly conservative, and inappropriate to include the unknown future cost of additional RES-related wind in calculating the RRI during the years before such resources are constructed or procured.

2. COST ACCOUNTING FOR SOLAR REBATES

Q: How do witnesses Crawford and Rush treat solar rebate costs when calculating RRI?

A: Mr. Crawford states that "GMO estimated the amount of solar rebates to be paid in 2013 based on recent history of rebate payments," (5 at 17) and included the total of those expenditures in the 2013 planning year. Mr. Rush similarly describes "GMO's current forecast" as "$40 million in solar rebate payments by the end of 2013" (5 at 10). Although neither witness articulates it directly, my understanding is that they are describing the number of dollars paid to customers in solar rebates, and assuming that these should be considered dollar-for-dollar in calculating the rate impact.

Q: Do you believe that this is the correct way to determine the impact of solar rebates on rates? If not, please describe how you feel this impact should be calculated differently.

A: No. I believe that if the solar rebate program is seen as procurement of long-lived resources on behalf of GMO's customers, they should be financed, amortized, and funded over the life of the resource. I base this opinion on the fact that in Missouri in particular, solar rebates are treated as resource procurement under the RES law—for example, under the recently signed and enacted House Bill No. 142 of 2013, 393.1030.3 now states:

> As a condition of receiving a rebate, customers shall transfer to the electric utility all right, title, and interest in and to the renewable energy credits associated with the new or expanded solar electric system that qualified the customer for the solar rebate for a period of ten years from the date the electric utility confirmed that the solar electric system was installed and operational. (HB 142, 11 at 88)

GMO is making investments for the purpose of procuring Solar Renewable Energy Credits (S-RECs) for ten years; therefore, the rate impact of this procurement should be similarly spread over ten years.

Q: How are the costs of compliance with renewable portfolio standards generally passed on to ratepayers?

A: In calculating the appropriate rate treatment of costs incurred for compliance with a renewable portfolio standard (including the RES as defined under 4 CSR 240-20.100 (1)(L)) it is useful to consider the available approaches for meeting such a requirement.

In general, there are four ways to meet a portfolio standard requirement, all of which are available to KCP&L and other Missouri utilities.

1) The utility may use RECs produced by existing qualifying renewable resources in its portfolio, assuming these RECs have not been sold to or retired by any other party; KCP&L is partly relying on this approach, using the Spearville facility, for the non-solar portion of its RES requirement.[1]

2) The utility may self-build qualifying renewable resources, and retire the RECs produced by these new resources.

3) The utility may enter into a long-term power purchase agreement with a new or existing qualifying resource owned by third parties, with the stipulation that the purchasing party assumes ownership of the associated RECs. KCP&L is also relying on this approach for compliance with the Missouri RPS.[2]

4) The utility may purchase RECs from other renewable energy producers of third parties independent of any energy purchases. KCP&L is largely relying on this approach to meet the "solar carve-out" requirement.[3]

Under each of these standard approaches, the cost of the RECs is appropriately passed directly through to ratepayers much as annual fuel costs are. However, this cost (the cost of RECs) reflects the *annualized* cost of each resource; under a purchase power agreement, for example, the seller expects to recover the capital cost of the resource, with a reasonable return on equity, over the lifetime of the

[1] KCP&L 2013 Annual Renewable Energy Standard Compliance Plan, paragraph 2.1.1.
[2] Ibid.
[3] Ibid, paragraph 2.1.2.

resource. If a resource produces energy and RECs over a twenty year period, it would be unreasonable to ask ratepayers to bear the entire cost of that resource in the first year of its operation, and it is unlikely that any regulatory authority would allow this sort of treatment in rates. Instead, the company would be required to pass through to ratepayers the cost of the energy and RECS used each year; in the case of a resource built and owned by the utility, the company would be required to finance the capital costs of the resource and pass through the amortized capital cost, along with the operating costs, over the useful life of the resource.

Indeed, 4 CSR 240-20.100 (1)(P) defines the "RES revenue requirement" as, "2. The costs (i.e., the return, taxes, and depreciation) of any capital projects whose primary purpose is to permit the electric utility to comply with any RES requirement." This affirms not only that the commission intended RES costs to be limited to those for projects whose primary purpose is RES compliance, but also that these involve capital assets the cost of which should be treated as depreciable for rate calculation purposes.

If solar rebate costs ~~should~~ are to be considered "RES compliance costs" under Missouri law, it is appropriate to give them similar rate treatment as any other RES-compliant resource. In other words, because this cost is associated with a resource that produces energy and solar RECs (S-RECs) for the utility over a period of 10 years, it would be most reasonable to finance and amortize the cost of these payments over 10 years. (Note that a 20 or 25 year period is more consistent with the minimum expected useful life of small-scale solar energy resources; however, because the utility receives the RECs for only 10 years, this is the appropriate amortization period.)

Q: Were GMO to amortize the costs of the solar rebate program over ten years, how would that impact RRI?

A: 10-year amortization would significantly decrease the RRI of any given level of solar rebates, providing much more room for the company to provide these

rebates under the 1% RRI limit. This is particularly so because of the reduced level of rebates under HB 142 as shown below.

Time Period	Solar Rebate Level under HB 142
Prior to June 30 2014	$2.00/Watt
July 1 2014 to June 30 2015	$1.50/Watt
July 1 2015 to June 30 2016	$1.00/Watt
July 1 2016 to June 30 2019	$0.50/Watt
July 1 2019 to June 30 2020	$0.25/Watt
After June 30 2020	$0.00/Watt

It is reasonable to conclude that the highest cash payments for the rebates will occur during the earlier years, when the rebates have the highest value and are the most attractive to consumers—and when those consumers most likely to take advantage of the rebates will apply for them. 10-year amortization allows these early-year costs to be spread out into future years in terms of their impact on ratepayers.

Q: GMO Witness Crawford argues against 10-year averaging of RES compliance costs with respect to the RRI limitation. Do his concerns apply to your suggestion that these costs be amortized over 10 years?

A: No. Mr. Crawford notes that, were the company to rely on a 10-year, forward-looking average of RES compliance costs,

> Since the RRI calculation for any given compliance plan year is based on forward looking costs only, it ignores costs incurred in previous years. If the previous year's actual compliance costs exceed 1% and the forward looking 10-year average is 1%, the actual RES compliance impacts can greatly exceed 1%. (7 at 17)

I agree that this makes the use of a forward-looking average impractical and inconsistent with the legislature's apparent intention with regard to the 1% RRI limitation. However, 10-year amortization does not present this problem. The point of amortization is to spread the costs out to a time period that is consistent

with the period over which benefits are received. In years 2-10, when benefits are still being received from investments made in year 1, an appropriate share of the cost will be included in rates for each year. This is precisely why amortization is the appropriate basis for rate treatment of all long-lived utility assets.

Amortization of costs for rate treatment is the way that the goal of the legislature to have 10-year averaging can be achieved, without introducing the distortion identified by Mr. Crawford. It is also the best way to ensure that the costs of the solar rebates and other RES resources are borne by the ratepayers who receive the benefits on a timescale that is consistent with those benefits.

3. TREATMENT OF THE ENSIGN WIND PPA

Q: Turning now to the calculation of the 1% RRI limitation, do you agree with GMO Witness Crawford that the Ensign Wind Power Purchase Agreement (PPA) should be included in the non-renewable portfolio?

A: Mr. Crawford states that the Ensign PPA was "added to the GMO generation portfolio based on the economics of the contract." (8 at 15) While I have not reviewed the company's resource procurement models, and thus I cannot make an independent assessment of the economic benefits of the Ensign PPA, Mr. Crawford's representation implies that the resource would have been included with or without the RES mandate—that it was not added specifically for the purpose of RES compliance, and that thus it should be included in both the nonrenewable portfolio and the RES-compliant portfolio for the purposes of calculating the 1% RRI limitation.

I would further note that, since this resource was chosen for economic reasons, it is reasonable to conclude that its inclusion led to a lower-cost portfolio than would have been otherwise procured. Thus choosing to remove this from the non-renewable portfolio would actually lead to higher cost, and the availability of more funds under the RRI limitation. Thus any implication that the costs of the

Ensign PPA should somehow reduce the funds available for other RES resources, or for solar rebates, would be inaccurate.

4. TREATMENT OF FUTURE WIND PROJECTS

Q: Please describe the table on Page 10 of Mr. Crawford's testimony.

A: Mr. Crawford compares the allowable ratepayer costs for solar rebates for the years 2013, 2014, and 2015. (Mr. Crawford deems these to be the funds available for rebate payments; I would interpret them as the portion of amortized costs that may be included in rates during these years.) He shows these values based on two calculation approaches: the "Company Method" and the "Staff Method".

Q: What is the difference between these two methods?

A: The "Company Method" does not consider expected future expenditures in calculating the funds available under the cap—that is, it includes costs incurred each year, compared to the ten-year average RRI limit. The "Staff Method" looks forward to future anticipated costs, including the anticipated cost of a wind project in 2018 or 2019, and includes them in the 10-year average of RES/rebate costs to be compared to the RRI limit.

Q: Which approach do you think is more appropriate?

A: Once again, I would turn to the generally accepted principle that cost should be accounted for in rates over a time period consistent with the duration of the associated benefits. This is especially so in this case, where the cost of the future wind project is unknown. In fact, given that the Ensign Wind PPA was found to be economic independent of the RES, it is reasonably likely that the company will be able to again procure low-cost wind resources in the future, and meet its RES obligations at a cost that is lower than currently anticipated.

The appropriate treatment is for the "cost" side of the RRI calculation to include the portion of current and past RES-related expenditures that are included in rates—i.e., the cost of rebates amortized over 10 years. Once new expenditures

are made (such as on a future wind project) then those costs should be amortized and included in rates over the useful life of that asset. The impact of these costs, if any, will not be felt by ratepayers prior to that time—thus there is no reason these speculative, future resource cists should be used to displace solar rebates from which GMO customers could be benefitting today.

To be clear, I am not arguing that solar rebates should somehow be given preferential treatment over wind—it is clear from both 2008 Proposition C and form HB 142 that Missouri has a stated public interest in both least-cost renewable energy (the RES mandate) and in supporting the development of distributed solar resources and a robust solar industry through the rebate program. My point is merely that the people of Missouri should not be denied the benefits of these programs today because of cost projections for future resources that may well turn out to be over-stated. And again, the fact that the Ensign Wind PPA was selected based on economics suggests that future RES mandates may be met without imposing any additional costs on ratepayers as well.

In summary, I believe that the company's approach is a more reasonable treatment of the cost of future wind projects with respect to the RRI calculation.

5. RECOMMENDATIONS FOR THE COMMISSION

Q: Given your opinions and conclusions on the matters addressed in this rebuttal testimony, do you have any recommendations for the Commission in this matter?

A: I recommend that the Commission reject GMO's petition to suspend payment of solar rebates. I further recommend that the commission direct GMO to revise its approach to calculating the ratepayer impact of procuring RES-compliant resources, including solar rebates, by amortizing all costs over the lifetime that each resource provides benefits to GMO and its customers. In the case of solar rebates, this should be the 10-year period over which each resource provides RECs to the company.

I further recommend that such costs not be allowed to include speculative future costs of resources that are not yet producing benefits for the company or its customers, such as the cost of wind resources that are expected to be procured or built several years in the future. Using correctly amortized costs of existing resources, and resources under consideration for procurement today, will enable the company to most accurately and appropriately provide benefits to customers while observing the RRI limitation year-by-year. At the future date when additional resources are needed and costs are known, the company will be able to make the best decision on how to comply with the RES mandate and the RRI limitation for that future year.

Finally, I recommend that whether or not it determines that solar rebate costs should be amortized, the Commission consider the concept of allowing GMO to pay "front-loaded" solar rebates in recognition of the step-down in rebate value under HB 142, in in the interest of minimizing the impact on solar rebate customers and the solar industry in Missouri.

GMO estimates a range of approximately $10 million to $12 million per year for solar rebate payments that would be compliant with the 1% RRI (Rush, 6 at 10-11). However, the rate impact limitation under HB 142 (as well as in under the original RES initiative) is specified as an *average* impact. An equivalent average rate impact could be derived by calculating a "pool" of the sum of the total solar rebate payments that can be made through 2019 that would comply with the 1% RRI impact requirements, and that would recognize the statutory step-down for future solar rebate payments under HB142. There does not appear to be statutory or regulatory prohibition that would preclude GMO from classifying any amounts of solar rebate amounts paid over the estimated $10 to $12 million per year as a regulatory asset of GMO, which could be recovered in rates in successive annual periods. GMO could also be granted a carrying cost on this regulatory asset. All solar rebate payments included within the regulatory asset (as well as the total carrying costs) could be recovered against the total "pool" of solar rebate funds available for recovery from 2013 through 2019.

For example, if the total amount available in the "pool" for 2013 to 2019 is $75 million, then GMO could pay unamortized, "front-loaded" solar rebates of $40 million in 2013, $30 million in 2014 and $5 million in 2015. Because the total amount of solar rebates funds in the "pool" would be then expended ($40M + $30M + $5M = $75M), no solar rebates would be paid after 2015. Under this concept, any adverse impacts on the ratepayers, GMO, solar rebate customers, and the solar installation companies are minimized.

Q: Does this conclude your rebuttal testimony?

A: Yes.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of KCP&L Greater Missouri Operations Company's Application for Authorization to Suspend Payment of Certain Solar Rebates	))))	File No. ET-2014-0059

AFFIDAVIT OF EZRA D. HAUSMAN, PH.D.

STATE OF MISSOURI)
) **ss**
COUNTY OF JACKSON)

Ezra D. Hausman, Ph.D., being first duly sworn on his oath, states:

1. My name is Ezra D. Hausman, Ph.D. I work in Cambridge, Massachusetts and I am employed by Synapse Energy Economics, Inc. as Vice President and Chief Operating Officer.

2. Attached hereto and made a part hereof for all purposes is my Rebuttal Testimony on behalf of Missouri Solar Energy Industries Association consisting of twelve (12) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

MELISSA SCHULTZ
Notary Public
Commonwealth of Massachusetts
My Commission Expires
July 27, 2018

Ezra D. Hausman

Subscribed and sworn before me this 16th day of September, 2013.

Notary Public

My commission expires: July 27, 2018