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BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

IN THE MATTER OF THE PETITION OF US MAGNESIUM LLC FOR APPROVAL OF A CONTRACT FOR THE SALE OF CAPACITY AND ENERGY FROM ITS EXISTING AND PROPOSED QF FACILITIES	Docket No. 03-035-38

PREFILED DIRECT TESTIMONY OF ROGER J. SWENSON

US Magnesium LLC hereby submits the Prefiled Direct Testimony of Roger J. Swenson in this Docket.

DATED this 5th day of December, 2003.

HATCH, JAMES & DODGE

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Gary A. Dodge
Attorneys for US Magnesium LLC

PREFILED DIRECT TESTIMONY

Of

ROGER J. SWENSON

On behalf of US Magnesium LLC

IN THE MATTER OF THE PETITION OF US MAGNESIUM LLC FOR APPROVAL OF A CONTRACT FOR THE SALE OF CAPACITY AND ENERGY FROM ITS EXISTING AND PROPOSED QF FACILITIES

Docket No. 03-035-38

December 5, 2003

Background

Q. Please state your name and business address.

A. Roger J. Swenson , 1592 East 3350 South, Salt Lake City, Utah 84106.

Q. By whom are you employed and in what capacity?

A. I am a principal in the firm E-Quant Consulting, LLC. E-Quant Consulting, LLC is a private consulting firm specializing in energy matters.

Q. Please summarize your educational and professional experience.

A. I have a BS degree in Physics and a MS degree in Industrial Engineering from the University of Utah. I have worked in the energy industry for over 20 years. Prior to working as a consultant I was the Vice President of Energy Marketing for an oil and gas production company that was affiliated with a cogeneration development company. Prior to that I worked for Questar Corporation in various positions including some time spent on rate making matters.

Q. On whose behalf are you testifying in this proceeding?

A. My testimony is sponsored by US Magnesium LLC.

Q. What is the purpose of your testimony?

A. My testimony will provide the basis for the pricing terms and conditions for the Qualifying Facility ("QF") contract submitted for approval in this proceeding.

Q. How are QF contracts a benefit to society?

A. QF facilities provide many societal benefits. They encourage reduced consumption of scarce natural resources, since the thermal energy from the exhaust gases are not wasted, as they often are by power plants, but rather used in other commercial processes. This not only reduces consumption of scarce

resources, but also reduces harmful emissions into the air since less fuel is consumed. QF facilities also add generation diversity and thus reduce risk. Moreover, since QFs are located at demand points, they can help reduce the need for transmission upgrades. They can also help promote economic efficiency at facilities where they are installed. Also, by selling QF power to a utility at avoided cost rates, host sites can utilize new technologies that otherwise may not be developed.

Q. Has the State of Utah taken a position on QF development?

A. Yes. Utah Code Section 54-12-1-2, which requires utilities to purchase QF power and energy under reasonable rates, terms and conditions, is expressly intended to "promote the more rapid development of new sources of electrical energy," to "maintain the economic vitality of the State," and to "promote the efficient utilization and distribution of energy." Moreover, a Utah Energy Office memorandum dated April 1, 2003, a copy of which is attached as Exhibit USM 1.1, concerning PacifiCorp's IRP process from Jeff Burks, Energy Policy Coordinator, clearly reflects the State policy to encourage development of co-generation and to overcome barriers to combined heat and power (cogeneration) systems.

Q. Has the Commission adopted any processes to facilitate QF development?

A. Yes. Years ago, the Commission approved Schedule 37, which sets rates and terms for the purchase of QF power and energy from small QF projects. Recently, the Commission approved Schedule 38, which was intended to create a process by which larger QF projects could obtain "indicative pricing" in order to determine

economic feasibility.

Q. How has the Schedule 38 process worked so far?

A. Unfortunately, not well. The Commission directed PacifiCorp on February 24, 2003, in Docket 02-035-T11, to file a methodology to develop avoided costs within ninety days. On September 24, 2003, in Docket 03-035-14, the Commission ordered PacifiCorp to file a revised avoided cost methodology within sixty days. To date, PacifiCorp has failed to make a filing with an appropriate or workable avoided cost methodology or to provide any specific answers as to how it proposes to calculate capacity payments. Also, while the QF working group has met several times and has discussed capacity payments, it has not reached a resolution on a proper methodology for determining capacity payments for a larger QF. PacifiCorp's failure to provide workable calculations and needed data has caused the Schedule 38 process to fail to produce its the intended results.

US Magnesium followed all of the Schedule 38 procedures, but we have still not received a pricing proposal that makes sense or a proposed contract. We provided all of the information specified in Schedule 38 or requested by PacifiCorp many months ago. While we have received some proposed prices, we have serious questions, which remain unanswered, about the proposed avoided costs and how they were determined. We learned in May 2003 that PacifiCorp's proposed prices do not include a capacity component. On July 15, 2003, US Magnesium submitted a written request pursuant to Schedule 38, section I.B.4., for a proposed contract, a copy of which is attached as Exhibit USM 1.2, and provided the

updated information required by the tariff. Schedule 38 requires PacifiCorp to provide a draft power purchase agreement within 30 days of receiving all required information, and US Magnesium specifically requested that contract negotiations be finalized by August 31, 2003. No draft contract has been provided by PacifiCorp, even to date, and no good faith negotiations have commenced.

Q. Why has US Magnesium filed its Petition in this Docket?

After spending over a year trying to obtain the information it needs to proceed with facility upgrades, time has simply run out. US Magnesium cannot begin the process of obtaining financing for its upgrades without QF prices in place. US Magnesium has, once again, been forced to turn to the Commission for a QF contract. US Magnesium has submitted a proposed contract for Commission approval. The proposed contract was derived from the draft generic contract approved by the Commission on August 26, 2003 in Docket 03-035-15, as well as its existing QF contract approved by the Commission in 2002 in Docket 02-035-02.

Q. To further the State's objective of facilitating efficient QF projects, how should the process work for determining avoided cost rates for larger QF projects?

A. The process should be clear, transparent and replicable and should provide reasonable results. It should provide a potential developer with correct economic signals. The process should lead to similar rates and results whether a resource is built by the utility or by a QF developer. Ratepayers should be indifferent with respect to cost/price because rates should be set at the utility's avoided costs.

Q. What kind of economic signals would you expect to see from avoided cost calculations at this time?

A. PacifiCorp has announced a need for more than 4000 MW of new resources over the next decade, with system growth projected primarily on the eastern side, particularly Utah. PacifiCorp also claims significant transmission limitations into the fast growing Wasatch Front "bubble." Given those expectations, I would expect to see dramatic avoided cost price signals that would strongly encourage the development of new resources within that bubble. Instead, the price signals we have received from PacifiCorp have been stifling to the development of QF projects. The US Magnesium site could provide for the development of over 500 MW of new resources to help meet the dramatic growth projected by PacifiCorp. However, US Magnesium could provide this level of generation resources only if the economics were sufficient to support the increased infrastructure and capital costs. To date, it has not been possible for US Magnesium to determine the capacity payment that such a facility would receive. This has been our experience notwithstanding the extensive work done by PacifiCorp to estimate the cost of the new facilities that it proposes to build.

Q. What has been your experience with PacifiCorp's IRP-based approach for estimating avoided costs?

A. The results, developed from "black box" models to which only PacifiCorp has access, are unclear, inconsistent and unreasonable.

Q. Can you provide specific examples?

A. Yes. One example is illustrated in Exhibit USM 1.3, which shows the "black

box" energy values provided by PacifiCorp on November 17, 2003, for a 100 MW plant with a 90% operating factor, based on two different approaches to adjusting the model to compensate for additional power sales that would result from the addition of the resource. The adjustments are made in an attempt to "fix" the amount of power that is hypothetically sold to the market in the model runs because PacifiCorp has included specific capacity value forecasts as part of its market prices. Exhibit USM 1.3 also shows the energy values provided by PacifiCorp for a smaller 15 MW unit for comparison. The results show the unexpected and illogical result that the smaller resource provides significantly less per-unit value on an energy basis. The smaller resource should logically avoid more expensive energy, since the displaced (avoided) energy from a larger resource will reach further down the resource allocation stack. Said in another way, as the size of the resource grows, the displaced energy moves further down the resource stack and the per-unit value of the avoided energy will be lower, since less costly alternatives are being avoided. Parties in the QF working group acknowledged in the last working group meeting that the IRP avoided cost derivation methodology that forces this "fix" to IRP resource allocation runs causes the model to run in a less-than-optimal mode.

Q. Are you aware of any other examples of inconsistent or unreasonable results?

A. Yes. Exhibit USM 1.4 provides updated avoided energy costs provided by PacifiCorp for a combined US Magnesium/Desert Power facility. The load profile presented to PacifiCorp for valuation included a 50 MW baseload resource

and a 100 MW dispatchable resource. This combination of resources should be much more valuable on a per-unit basis than a 100 MW baseload resource because it would permit the avoidance of many more purchases during high-cost peak hours. Yet, the per-unit prices reflected in Exhibit USM 1.4 for a 50 MW baseload/100 MW dispatchable resource are less than 80% of the per-unit prices reflected in Exhibit 1 for a 100 MW/90% load factor plant. Both sets of prices were provided by PacifiCorp within five days of each other, so there should be no significant differences in underlying assumptions. No logical explanation of these results has been provided by PacifiCorp.

Q. Is there a better approach for determining avoided costs?

A. Yes. Determining avoided costs with reference to the "Next Deferrable Plant" ("NDP") produces much better results. The IRP model was designed to provide guidance on the value of different resource development options under a variety of uncertain future conditions. We should not expect such a model to provide explicit avoided cost values. At best, the IRP model will provide "guesstimated" values based on the price forecasts that were input to the model. Market prices experience tremendous volatility, with actual prices sometimes varying from forecasts by 50% or more within even one year. The IRP model can properly be used to help determine the next specific plant or contractual resource that can potentially be deferred. Actual costs associated with that deferrable resource should then be used to set avoided costs.

Q. Have you utilized the NDP approach in the contract submitted with US Magnesium's Petition in this docket?

A. Yes. Under the submitted contract, PacifiCorp will pay US Magnesium monthly for deliveries from the facility at a price that includes a fixed capacity payment derived from PacifiCorp's current lease agreement for the West Valley units, and fixed and variable operation and maintenance costs derived from PacifiCorp's actual operating costs for those units. The purchase price paid by PacifiCorp during the first year will be based upon the fixed and variable costs actually incurred by PacifiCorp in connection with the West Valley units for the twelve month period ending December 31, 2003, the actual heat rate of the West Valley units, actual fuel costs as they are incurred in the future, and PacifiCorp's ability to schedule the US Magnesium facility as though it were a West Valley Unit. After the first year, the fixed and variable components will be adjusted based upon inflation. For capacity and energy provided by the QF facility when PacifiCorp does not schedule it, the price will be based upon the lower of the West Valley-based costs or firm or non-firm market prices, depending upon PacifiCorp's then-current resource position. The specific costs, pricing factors and formulae used to calculate the monthly purchase price are detailed in Exhibit D to the contract.

Q. Please explain how the NDP approach is used to determine avoided costs.

A. By identifying the NDP, a specific type of deferrable resource can be used to calculate operational costs that can potentially be avoided. The NDP resource will have a variable operating cost profile that can be used to directly determine avoided costs, based on fuel consumption and operating and maintenance costs. The NDP resource will also have a specific capital cost component, based on actual costs derived from contracts, estimated costs from the IRP process, or other

relevant sources. This is the approach used in setting the rates specified in the QF contract submitted by US Magnesium.

Q. How should avoided costs payments be structured?

A. Capacity payments should be based on avoided revenue requirement impacts from the specific NDP resource, using the existing approved capital structure and capital costs of the utility and the established tax rate. The energy payment should be based directly on the known fuel consumption of the NDP resource times the "actual" fuel price at the time of delivery, plus a fixed and variable O&M factor. Losses that are avoided should also be included in the calculation of avoided costs. The utility should then dispatch the QF resource in its planning just as though it "owned" the resource with the contractually specified heat rate and operating costs. This approach will give the utility a resource with set variable operating costs that will justify the capacity payment to be made.

Q. Is this the way Schedule 37 avoided costs were calculated?

A. No. However, the NDP approach is superior and less risky to the utility and its ratepayers. Moreover, it is much more flexible. It will naturally track identifiable needs as the NDP changes based on changing load and resource requirements. The IRP model will provide the NDP as it is updated over time. The QF contract will be based on the specific NDP at the time of the contract. As future resource requirements change, the NDP used to calculate avoided cost payments for a new QF will also change, reflecting the new circumstances. This approach will not require price forecasting or the attendant risks of locking in prices that may prove to be extraordinarily high, particularly if locked in during periods of peak gas

pricing forecasts. Instead, the NDP approach looks to the specific costs of the NDP and uses actual fuel and O&M prices to establish payments, just as if the utility had the NDP plant in its resource mix.

Q. You propose that QF prices should be based on the NDP's heat rate and dispatched as such. What if a QF elects to operate for more hours than the economics of the resource would suggest?

A. If the QF plant desires to operate beyond the hours that would be economic given the utility resource stack or the utility does not have a specific need for the plant to operate for system requirements (the dispatch hours), then the plant should receive a market-based price. That price will be lower than the variable operating costs being paid by the utility, based on the operating characteristics of the NDP. The market price should be based on transparent published market prices, shaped hourly as is done in the PacifiCorp IRP. The variable energy price paid to the QF will always be the lower of the operating cost of the NDP resource or the market. PacifiCorp and its ratepayers will thus be protected from over-priced QF contracts and the QF owner will have relative certainty in its revenue stream based on a known capacity payment and defined variable operating payments.

Q. Are you aware of any concerns with the use of market prices in avoided cost calculations?

A. Yes. The QF working group has had discussions concerning capacity payments embedded in market prices. Some participants have suggested that a "double" capacity payment will somehow accrue to a QF if it receives firm market prices during some operating hours. While I understand the argument, I am not

personally persuaded by it. Nevertheless, there is a relatively easy way to avoid this potential "double" capacity payment.

Theoretically, hourly market prices are set by the variable operating cost of the last unit dispatched to satisfy market demand in an area. As demand rises, units with higher variable operating costs are drawn into the market. Units with lower variable costs of operation than the last dispatched unit will recover some margin, depending on specific variable operating costs of the unit compared to the market price. Some people might consider that margin or difference to be a type of capacity payment, since it is a value received above variable costs. Under this view, the **market** effectively pays the capacity costs associated with meeting its needs.

Q. Would paying market prices to a QF for energy delivered during non-dispatch hours increase costs to ratepayers?

A. No, as long as the price paid to the QF avoids a PacifiCorp market purchase or PacifiCorp is a net seller in the market at the time. Under either such circumstance, the price at which PacifiCorp is avoiding buying or selling additional power is the same as the price being paid to the QF. Ratepayers under those conditions will be kept whole. The only time that the "double" capacity payment concern might arise is when the utility is a net seller into the market, based on its resource position. One means to address this concern would be the use of a non-firm index price for avoided costs when the QF is operating during non-dispatch hours and the utility is a net seller. The difference between firm and

non-firm pricing arguably accounts for capacity value within market prices. For the five year period ending December 31, 2002, using the Dow Jones published index prices, the difference between firm and non-firm prices amounted to approximately $7.00/MWH. This solution was used in the contract proposed by US Magnesium in this docket. Under this approach, actual non-firm index pricing shaped by specific hourly pricing factors should be used and the specific hours that PacifiCorp is a net buyer and seller in the market should be tracked and verified by audit.

Q. What NDP was used in the agreement that you are asking this Commission to approve?

A. I used the West Valley lease as the NDP. I chose that resource since the lease has a termination provision that will allow it to be dropped as a resource in 2006. Also, we have clear and determinable variable and fixed operation and maintenance factors for that resource that can be based on actual verifiable cost from a historic period, as well as a specific capacity payment that can be directly derived from the lease payment.

Q. Can you summarize your position concerning the process for developing avoided cost rates and the pricing terms you have included in the proposed US Magnesium agreement?

A. The methodology being pursued by PacifiCorp to determine avoided cost rates has proven to be unworkable and unverifiable. The results are illogical and no one outside PacifiCorp can run the model, confirm the inputs or verify the results, since PacifiCorp alone controls the "Black Box." Moreover, PacifiCorp has not

even proposed a workable method for calculating capacity payments. I strongly recommend that the Commission use the Next Deferrable Plant as a proxy for capital costs and variable operating costs for setting avoided costs rates. The QF will be paid for energy based on the lower of variable operating costs associated with the NDP or market prices. If PacifiCorp is a net seller in a given hour when the QF is operating, when not specifically dispatched, the QF should be paid at non-firm market prices. If PacifiCorp is a net buyer in a non-dispatch hour, the QF should receive the lower of firm market cost or the variable operating cost of the NDP. The QF should be paid a capacity payment equal to the actual revenue requirement costs that ratepayers will avoid, based on the capital cost of the NDP. Under this approach, PacifiCorp and its ratepayers will be protected against erroneous market projections and QFs will receive reasonable and verifiable avoided cost payments.

Q. Is the proposed US Magnesium contract is in the public interest?

A. Yes. The NDP approach used by US Magnesium in submitting its proposed contract will encourage and facilitate the use and redeployment of facilities in an efficient manner and help alleviate projected capacity shortfalls in the Salt Lake Valley. US Magnesium will receive prices based on costs actually avoided by its resources, and ratepayers will be held harmless. US Magnesium will receive the pricing certainty that it needs to pursue necessary upgrades to its facilities, enhancing its ability to remain a significant contributor to the Utah economy.

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing was mailed, postage prepaid, this 5th day of December, 2003, to the following

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