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ENERGY

THOUGHT LEADER FORUM

Uncertainty is the norm in the energy industry, but calculated planning can help prepare Oregon for a renewable future.According to the state, by 2040, half of Oregon's electricity will come from renewable resources. Currently, most of Oregon's energy is used for transportation, heating/cooling, and electricity. Hydroelectric power makes up the largest portion of the state's electricity resource mix, followed by coal and natural gas.The Portland Business Journal invited Ronan O'Mahony, Pacific Northwest branch manager with Envise; Julie Desimone, partner and Energy and Utilities National Practice Leader with Moss Adams LLP; Jason Johns, partner with Stoel Rives LLP; and John Rush, delivery director at Percipio Consulting Group to discuss the state's current energy landscape, what guides decision-making and energy planning, as well as cannabis products driving load growth. The forum was moderated by Erica Heartquist on behalf of the Portland Business Journal.

Erica Heartquist: What are the primary trends in the regional energy industry that will impact the operations of both utilities and renewable developers and operators?

Jason Johns: There has been a sustained push by large power users—data centers, for example—for more optionality that will allow for direct renewable energy purchases. That effort is creating a new market for renewables in the Pacific Northwest and is supporting the development of projects that had been on drawing boards for several years. Second, residential consumers are getting their shot at more direct participation in the renewable energy industry through programs like community solar gardens and other green tariffs. The growing demand at commercial/industrial and residential levels to participate in the market is driving new growth in the region.

John Rush: For renewables, two significant trends have been the expansion of demand beyond State Renewable Portfolio Standards to end-users demanding energy from renewables, and the move toward cost parity of renewables compared to traditional generation resources. Both trends are continuing the development of renewable resources and continuing the expansion of regional and national renewable players. With end customers now demanding renewable energy (not just driven by state requirements), we will see an increased customer focus within the renewable sector, an element that has not been part of the utility/energy equation to date. With emerging cost parity of renewables compared to traditional generation, renewables will become economically viable without the dependence on government policy. Both of these trends will move renewable developers to begin to invest more in understanding customers and continuing to evolve business beyond utility focused demands. On the utility side, two significant trends have been low load (and revenue) growth in the region and the continued expansion of renewables within the region and within utility balancing areas. The low level of load growth has limited utility revenue growth, but utility costs continue to rise (investments, labor costs, materials inflation, etc.). With increasing costs and steady loads, there has been tremendous pressure on electricity rates ($/MWh). Utilities are having to focus more than ever on costs to minimize rate pressures. With the increase in the proportion of renewables within utility balancing areas, utilities are also having to work harder to balance, putting further pressure on rates. All of this in a regulatory environment that could not have possibly imagined such complexities.

Julie Desimone: Stranded cost right? I mean that's really the question. How are we integrating energy efficiency or renewable energy in a way that can be sustainable for the long-term in the United States? We've pumped all this money at mostly the federal level into making renewable projects the hot ticket item. But the question that needs to be answered is: "have we done it in a fashion that's going to keep the renewable industry sustainable into the future?" Utilities and energy producers have spent billions of dollars on old school technologies that are currently producing sufficient energy to meet demand in many areas. If renewables outpace natural growth or demand, then the risk is that either the old school technology becomes obsolete, or renewable energy production slows down. If old school technology is no longer needed, how do these stranded costs (costs that have not been recovered by ratepayers) get recovered and how does this impact the renewable energy sector.

Ronan O'Mahony: Some of what we're seeing is a huge investment in the I-84 corridor and all around the metro area in particular. A lot of our clients and their businesses want to have some degree of back up – the reassurance that they can be off the grid if needed, can generate their own power and continue to operate in the event that local utilities lose power for one reason or another. These are businesses that want to have as much continuity as possible, and so they're coming to the conclusion that they need to assert more control over their ability to withstand and deter interruptions. The other rising trend really is the growth – excuse the pun – of the grow industry. That's putting a load on a grid that is not up to sustain the energy that that business requires.

Heartquist: Is that hard to balance?

Rush: In terms of balancing energy demand with supply at the grid planning level, there are some areas where there appears to be some

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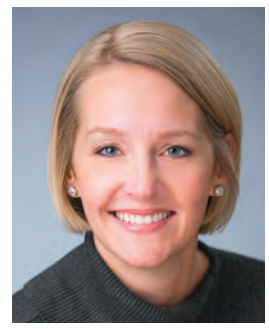
RONAN O'MAHONY

PACIFIC NORTHWEST BRANCH MANAGER, ENVISE

Ronan is responsible for developing solutions to solve problems for clients while overseeing all branch operations.

Ronan joined the mechanical, engineering and plumbing industry in 2000. He began focusing on sales, team expansion and improvement and collaborating with clients to develop lasting relationships. By consistently seeking ways to advance customer service, he has been able to manage high-profile accounts with complex structures. His understanding of the industry has enabled him to become well versed in energy efficiency master planning, energy and lifecycle management strategies, retro and continuous commissioning, and system integration.

Ronan graduated from Dublin Institute of Technology in Ireland, with a bachelor's in mechanical engineering and a post-graduate diploma in project management from Trinity College, Dublin.



JULIE DESIMONE

PARTNER AND ENERGY AND UTILITIES NATIONAL PRACTICE LEADER, MOSS ADAMS LLP

Julie has been providing auditing, accounting, and consulting services for 17 years.

She serves clients in the energy and utility industry, including alternative energy and renewable resources. Some of her specific areas of focus include: advanced utility accounting, regulatory assets and liabilities, technical auditing (including single audits), contracting, internal control evaluation, litigation support, and relationship management.

Julie currently serves on the firm's executive committee, training and development committee, audit task force, and recruiting program. In addition, she serves as an AICPA peer reviewer and is a regular speaker on technical and operational issues related to the energy and utility industry.

JOHN RUSH

DELIVERY DIRECTOR, PERCIPIO CONSULTING GROUP

John has more than 25 years of experience working with and leading teams in a variety of situations, including 20+ years as a management consultant and 5+ years as corporate project manager in the electric utility industry.

He has developed a deep understanding of the electric utility business, including the impacts of regulation, legislation, market conditions, physical electrical system elements, business processes, financial requirements, and strategy. John has specific experience as a consultant at PacifiCorp, Northwest Federal Power Marketer, Iberdrola Renewables, and several NW Publicly Owned utilities.

JASON A. JOHNS

PARTNER, STOEL RIVES LLP

Jason advises independent power producers, utilities, investors, and large users of gas and power resources with matters arising in power markets and state and federal energy regulatory arenas.

Jason appears regularly in proceedings before the Federal Energy Regulatory Commission and in negotiations at the ISO/RTO level, where he represents independent power developers and utilities.

His experience includes the negotiation of major facility contracts, such as interconnection, transmission, and power purchase agreements, the prosecution of disputes at FERC, and counseling and defending clients on issues related to regulatory compliance.

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common ground. For example, energy efficiency is an investment that is both good for a utility and a sound business investment. Reducing energy demand and reducing the need for generation is good for everybody. I think that's one of the areas where most everyone can agree. I think the utilities have done a good job of weaving energy efficiency and demand response into the Integrated Resource Planning process and making it a resource that gets selected in the end (based on analysis and cost competitiveness).

Johns: But if the focus is "energy not needed", the question becomes "how do we handle stranded cost?," to the extent they exist with our baseload fleet. We have seen contentious efforts in Illinois and New York to subsidize nuclear facilities because they are struggling to compete in markets where demand response may participate on a wholesale basis. If we take steps in the West to create expanded opportunities for "energy not needed", will we have to take similar steps to subsidize our coal and natural-gas fired facilities? Or will we let the market alone choose the winners and losers?

Desimone: I do think that the demand for renewable resources in the Pacific Northwest will continue. This is primarily due to the fact that we substantially rely on the federal hydro reserve and it isn't going to get any bigger. So, in our marketplace, as demand continues to grow and our market prices are competitive, it makes the appetite for renewable energy even more sustainable, especially because we've got a good, firm resource (hydro power) that I think many would argue is renewable in its own nature.

Rush: It's down to the idea that you expect the demand for energy to increase to 'X' amount every year. It's watching to make sure that your assumptions are steady and that they make sense in the new environment. What we've seen is a pretty flat load. If things stay steady, you're now at a revenue cap with an increasing cost structure which makes it more challenging. I think we've done a really good job as a region of incenting energy efficiency and creating innovative ways to integrate energy efficiency and renewables into the utility planning processes. That said, we will have to continue to be innovative and creative in addressing the challenges we are seeing in the near future.

Heartquist: What are the primary concerns on the regulatory and compliance front for regional players in the energy industry?

Desimone: The biggest concern is how is all of this going to integrate together and I think if you talk to a lot of the big players on the utility and regulatory side of it, there are concerns with the integration of renewable resources, both on a large production scale and micro-unit (home use) scale. If we keep seeing customers potentially going off the grid or reducing their load significantly, this impacts all of us that pay for electric service as there are significant sunk costs that need to be recovered from current rate payers. Renewables are forcing many changes, including rate design, to the industry.

O'Mahony: A term we hear about in technology a lot is "disruptor." Think of your iPhone. When that hit the market, it was a disruptor of the traditional phone space. In this same way, renewables are a disruptor of a traditional, non-renewable space. A lot of companies and individuals use the term, 'smart building' and 'smart cities,' like we all know what they are, as if there is some definition. But, I think everybody has their own vision of what that looks like. And, if you want to fast forward into the future and imagine what that might look like, if you decentralize power and you have renewables everywhere, then you have a dynamic grid where individuals are able to take control of their power.

Johns: From a renewables developer's perspective, they are concerned with the limitations that are imposed on their business by the market and regulations, particularly in the northwest where they still operate within a balkanized system and a century-old regulatory construct. There are certainly good reasons for that construct, but to some extent it also prevents the expansion of the energy market and limits development as a result.

Rush: You hit it when you talk about the regulatory and compliance piece. The majority of our power still comes from the grid. We have an increasing share of renewables which introduce volatility, but there's still a need to make sure that the stability of the grid is intact. And, that's sort of where we stand now. As you see, several factors are chipping away at the utilities' regular business. That piece of it has been interesting and the regulatory construct as you said, Ronan, has not changed. The divergent energy preferences of states in the West in terms of renewables or traditional generation sources and the proliferation of more volatile renewables will require more creative regulatory constructs and a broader base of resources to use for balancing.

Desimone: And when you add the volatility to the market, but keep the same principles of setting rates, there are bound to be issues. I remember when solar on houses started taking off and most utilities would buy back any excess energy the house would produce. However, I think we've found that there is a cost of serving these houses, which isn't just the electric side. If their solar system on the house goes down, the expectation is that the house can jump back on the grid and still get energy. There is a cost for building a system that provides a back up to these micro-units, but figuring out how utilities monetize this in their rate structure is difficult and a new concept that really hasn't been dealth with in traditional rate making. We must have the conversation of "should we charge a fee to these solar users who may need the grid in the future if their system fails or do we have to build enough redundancy in our system for these users?" Rate structures are going to be completely different in the future due to renewables. It'll be interesting to see how we adapt and whether we adapt fast enough.

Heartquist: What role has the CAISO Energy Imbalance Market (EIM) had in integrating renewable energy more cost effectively, and what does that EIM mean for the future of an organized market here in the Pacific Northwest?

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Rush: We've had clients on both the renewable and utility side watching it happen, and if you are a renewable developer or renewable owner, it's a great opportunity to have an alternative to get your imbalance supply. Renewable developers are actively pursuing the CAISO EIM market. On the utility side, PacifiCorp and PGE are already participating and BPA (one of the largest NW transmission operators) is making major investments to allow its 140 customers to participate. There are very significant investment in the tools required to participate in the EIM market and it will change the way all of these players operate going forward.

Johns: My hope is that the energy imbalance market is the gateway drug to an organized market, a fully organized market in the Pacific Northwest and across the West. I think there's a strong demand across the industry for a larger organized market throughout the west. But the pace and prospects of that evolution continue to frustrate some, causing utilities in the Intermountain West, for example, to consider joining organized markets to the east.

Desimone: Especially recognizing that the weather patterns across the entire west are so different. I think that's where if you just stay to California, California is going to draw a lot of energy all the time. We have access and (we need to make) sure that we can balance that out. I mean, how many days in the last five years have we seen negative pricing? There's a need for energy out there but right now we just can't get it to the right places and the right time frame because there is no organized market so we're killing it into the ground.

O'Mahony: With wind generation I understand we're sending a lot of this power to California to enable them to meet their requirements for meeting renewable resources, and this is a significant chunk of renewable energy that we're not benefiting from up here in the Pacific Northwest.

Johns: California, too, could also benefit from an expanded organized market, because it would provide more flexibility with respect to the state's solar resources.

Desimone: And now Colorado is going south, but it needs to be bigger. It needs to be integrated and larger. It's fascinating.

Rush: I'll add one piece to it, too. The transmission component of what's needed to make that kind of stuff happen is almost impossible to build these days. I remember the president of Rocky Mountain Power saying the hardest job he's ever had is trying to convince people to let them run a power line across their property in Wyoming.

Heartquist: What slowdown, if any has the new administration had on the development of renewable energy?

Johns: This administration has had as much impact perhaps as the last administration on energy policy, which is little if any. All the activity continues to happen on local and state levels. Given the vagaries of Washington, D.C., perhaps that's for the best.

Rush: Simple answer I'd say what Jason said – very little impact. The part I find most interesting is watching the timing, and maybe it is correlated but renewables are coming to cost parity with traditional generation resources. Now that you've closed the gap between the cost of just having a utility service and having your own resource, or at least a renewable resource that you can put on there – people are pulling the trigger. The demand for renewables is no longer just driven from energy policy (and subsidies), it is driven by economics and the demands of end-users for energy from cleaner sources.

O'Mahony: There is so much momentum that, to some degree, the growth of the renewable sector is less affected by policy change. I think for decades people have been talking about renewables in terms of a moral argument – being green and good for the environment – that a lot of that is embedded in our thinking and that train has already left the station. It's the private corporations who set their own standards for emissions reductions and sustainability policies that are continuing to drive this forward. Beyond that, the states and local municipalities are continuing to set policy standards and goals for renewable energy.

Desimone: I think the biggest impact is putting that new FERC (Federal Energy Regulatory Commission) commissioner in because they can actually make a decision at the FERC level, finally. As far as renewable energy, I agree with the rest of the group, very little impact.

Heartquist: How can people, individuals and companies use technology to make buildings more efficient?

O'Mahony: I think it really starts with being able to get the data and understand where you are; create a baseline. If you really want to do something different, you have to look at where you are today and then know where you want to be and define the steps it will take to get there. Look around at all the technology just on this table right now and on our wrists even. We're all about data.

Desimone: Historically, and maybe not within the last several years but before that, utilities didn't provide that much information to users of the energy. I mean, they'd provide how many kilowatts go to your house, but not how that breaks down hour by hour or what parts of a building is using the most energy. That trend is changing, which gives the user of energy more information. This is really interesting in new building construction and retrofitting of existing building. If you don't have better information, you're going to do what you've done in the past because that's what you know. So, the key is infiltrating specific usage information at the development or retrofit level to convince people to change from past ways, if those ways were inefficient from an energy usage standpoint.

Johns: I think the availability of data drives behavior, too. For example, just this year I installed a smart thermostat in my house so I could gain a better understanding of how and when we are using electricity. Just seeing the data in a usable form has driven me, personally, to act differently. In this way a building can cause a user to become more efficient.

Rush: Certainly the visibility to information about your usage. There are energy efficiency programs, national programs, set up around comparing you to your neighbors and making it visible that 'you're doing a good job,' or 'you're not doing a good job.' It's that simple and it is super effective. That visibility toward information, not even getting toward the data level, I think that's a really interesting phenomenon. Secondly, just like you said, utility infrastructure is really what you should rely on for that type of data. It's there and it's measuring relatively the same thing. But, the non-utility market has surpassed it.

Desimone: Twenty years ago when you bought a dishwasher, there was no time delay on it. You pop all your dishes in and you start it, right? Now we have the time delays. What's going to happen in 20 years? Probably that dishwasher is going to be connected to a smart meter and it will start itself when energy demand and pricing is advantageous to the home owner. You can just think about how this access to information, and I know this is an energy forum, will impact other utilities as well. I mean as many resource issues as we have on the energy side, the world potentially has much bigger future problems when it comes to water resources and the lack of water for a growing population. So, if we're going smart on energy, you can also apply that same technology to water resources. It could have a massive impact globally, quite honestly, from a water and energy standpoint.

O'Mahony: This energy technology is really going to be a big catalyst for change. If you don't have the data, then you don't fully understand situationally where you are or where you want to be. When you push information out to people, that drives behavior. If you tell somebody you're going to go to the gym, you put peer pressure on yourself to go to the gym because you told somebody you were going. Now you actually have to go. So it's all the physiological and behavioral impacts that data can play.

Desimone: For many in this country, there is a belief that energy and water are a human right. People want to walk into a room, if they pay their bills, and it's their right to have drinkable water coming out of their taps and lights that go on when they turn them on, right? But both power and water are a sacred resource and there's only so much of it throughout the United States unless we pump billions of dollars more into the market. Look at what the behavior is when a huge black out occurs – just pandemonium.

Johns: It's a very complicated industry and most people don't have the need or the time to understand more than that flipping a switch causes the lights to turn on. But technology is making this industry more tangible for the everyday consumer and it's doing so in an interesting and engaging way.

Heartquist: Do you think we're 'greener' or more energy conscious here in the Northwest where we tend to be more aware of our environment and our surroundings? Or, do you think this is happening across the United States?

Rush: There's definitely an increased awareness at the "average person level" across the nation. But, in my experience within this region, we've been policy leaders in many ways. I think California has taken that policy driver and taken the forefront of that. However, we are also seeing energy and renewable economics drive developments in places with less directive energy policies. For example, wind development is expanding aggressively in Wyoming because the state has some of the best wind resource in the nation, Texas is another great example of economic resource development. On the individual side, it also seems like we're developing more 'energy geeks,' (people who are interested about energy topics) everyday which in my mind is a good thing.

Johns: I don't think it's limited to the Pacific Northwest. We regularly work on renewable energy projects across the country, and I have seen little distinction between red and blue states in this regard.

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