

Q1 & Q2. What qualifications, experience, and contributions do you bring that will add value to the OPALCO Board of Directors? What relevant experience have you had serving on a board of directors?

(This supplements the brief write-up included in the voting material).

A well-functioning board acts as a deliberative team, working with the Executive to help shape and guide policy, achieve near-term goals and the long-range vision, and recognize member needs and concerns.

In this regard, I draw upon four "careers" to bring value to this board:

- As an engineering officer involved with updating technology for a world-wide network of stations collecting data from space satellites.
- As a renewable energy policy analyst, and later, Federal Executive, involved with a large portfolio of science and technology investments.
- As a private-sector executive variously setting-up, overseeing as board member, and helping to develop several closely-held small businesses involved with technical services and venture investments.
- As a long term islander developing personal property, including solo-building a house of my own design using untraditional technologies.
- As an volunteer member of a county commission and board treasurer for a very active local not-for-profit.

It also seems helpful that, by education and certification, I hold degrees in electrical engineering and business administration and certification as a Washington state registered Professional Engineer (P.E., now retired),

One of the ironies of life is that roles and experiences that we might have thought to be of less significance, or unglamorous, can loom to the fore. Though my career includes influencing the flow of billions of dollars for well-known purposes, especially relevant now may be the years working in and with small businesses, and in developing property on a tight budget. Small businesses are the economic engines of smaller communities like ours, Rock Island being one of them. Our co-op is larger, but it too has constrained prospects for future revenue growth.

As every successful small business leader knows, "Cash is king". Numbers always matter. But all risks can never be eliminated or even fully quantified. Key decisions are ultimately also qualitative, a matter of business judgement. Ultimately, in contemplating new projects, it comes to seeking clarity about our needs and promised benefits versus likely costs and risks, and alignment with our values, vision and commitments.

Also, being a full time member of an island community for two decades and an active community volunteer helps make one aware of what "community" is about. Much depends on the the ability of our island businesses, and their employees and employees' families, to thrive. Electric power is an essential core service, but the burden of payments for all basic services, including electricity, cannot rise without limit.

Providing an essential community service is about reliably delivering today ... every day. That said, today is less likely to be a good day if our co-op does not recruit, train and motivate an excellent staff, anticipate and prepare for tomorrow, and adapt gracefully to a changing world. For an essential core service like electric power, it can never just about today or tomorrow; but always about dealing equably with both.

Above all, keeping faith with our the owner-members remains crucial.

Q3. What do you see as OPALCO's strengths, weaknesses, opportunities, and challenges?

Our co-op's strengths.

- Our grid is modern, persistently maintained and upgraded to serve current needs and prepare for the future.
- We have by long-standing law the right to purchase most of the power we need at cost (no profit mark-up), supplied as clean, renewable hydropower from large dams in the region.
- Our co-op has experienced leadership and staff, a team trained and tailored in size and capability for its mission, well attuned to reliably delivering its essential core service to the community.
- The co-op structure is focused and business-like, not-for-profit but not a charity, with allegiance to member-owners and our communities.
- Our co-op is forward-thinking and improvement-oriented.

Our challenges are inherent in serving a remote, geographically-separated array of residential island communities in an era of less predictable weather and climate, facing evolving shifts in the way that energy will be generated and consumed. Key challenges include:

- Complete Major Ongoing Projects as Planned. Our broadband unit is widely and quickly bridging from our co-op's fiber backbone to interested member premises, while also becoming financially self-sustaining. It appears on course but remains a work in progress.

- Flatten Peak Use. Our co-ops' annual power sales are quite constant from year to year, but our power use varies sharply with time of day and season, peaking in the cold weather months. Power utilities pay more to purchase wholesale power during periods of peak use.
- Remain Prepared for Both Planned and Unscheduled Needs. Our co-op has a variety of capital projects underway or planned. We must all remain ready to make repairs and up-dates as needed, not all of which can be fully anticipated.
- Anticipate Long Term Changes in Regional Power Arrangements. In the long-term, wholesale power arrangements may become more sensitive to natural, market, and political forces beyond our control.

Opportunities and Strategies to Navigate Our Challenges.

Vigorously Exploit New Advantage. As broadband reaches more members, facilitate interested member use of technologies of mutual benefit that shift or shave peak use and increase electric vehicle use. Help members make full use of incentives offered by BPA, our state, and others.

Vigilantly Maintain Financial Strength. Co-op planning anticipates future needs while preserving financial strength, amortizing debt over time. That said, our board and management need to keep first focus to "eat what's on our plate", including both ongoing and soon-to-start projects.

Maintain Readiness, Insight, and Long-Range Planning.

- Seek practical options to mitigate and rapidly recover from outages.
- Strengthen relationships with other industry players to secure insight and anticipate (and possibly influence) evolving changes and options.
- Persistently pursue, low-level, long-lead activities to evaluate prospective long-range options for clean local power generation.

Q4. What do you hope to accomplish if you are elected?

Our co-op delivers an essential, core community service. This service and our institution that provides it must remain stable, reliable, and up-to-date. We must maintain and build-upon our proven suite of invested technologies, skills, and power business practices. Yet, we must also anticipate and adapt to the profound shifts emerging in the ways energy may be generated and consumed, going forward. And all must be handled with little prospect of sustained, real growth in power revenue.

In this context, if elected, my intentions are to add a collegial voice to the board team, working with management to:

- Support our co-op's mission to provide utility services in a safe, reliable, cost-effective and environmentally-sensitive manner.
- Prudently maintain our financial strength and revenue stability while integrating thoroughly the measures underway and planned for keeping our grid up-to-date and adaptive to evolving shifts in the way power is generated and consumed.
- Bring the perspective of a full-time resident who recognizes the need for our local businesses, their employees, and their employees' families to thrive if our communities are to remain viable for residents of all ages to live, full-time and long-term.
- Help balance attention to current needs and future opportunities through a process of persistent, measurable, step-by-step progress.

Q5. What is your opinion of OPALCO's Rate (Tariff) Structure?

I support the rate setting process described at the OPALCO website (Resource Library/Data Insights/2017 Budget Insights_Setting Rates).

Our co-op tariffs structures appear similar to those applied by other electric co-ops in the Northwest. Residential and commercial tariffs are comprised primarily of (1) a "facility" or "service" charge, (2) use, or kilowatt-hour (KWH) energy charges, including "block" rates for heavy power users, and (3) smaller, special purpose fees. Our co-op's rate structure must yield sufficient revenue annually to cover all costs while being fair to each member, whether residential or commercial/industrial. Rates should, ideally, change slowly, so we can all plan ahead.

Facility Charge. The facility charge helps to sustain the availability and reliability of full service year-round to all members, whether they reside here full-time or part-time.

Facility charges reasonably vary with class of service. Some non-residential members may require larger transformers, more expensive metering, or specialized equipment. However, for our co-op, the differences among class of service are not large.

KWH Charges. The KWH charges, or use charges, follow directly from our metered use. You can check your actual use by downloading the "SmartHub" app from the co-op website (opalco.com/about-your-account/smarthub-online-bill-pay-usage-viewer/).

Our co-op periodically rebalances the facility charge and the KWH rate to preserve revenue stability and to recognize the differing effects of such changes among members, e.g.,"

- On full-time versus part-time residents
- On lower income residents
- On desired incentive outcomes (e.g., achieve greater efficiency, lower carbon footprints, promote local renewable energy use)

The user KWH rate does not directly relate to the price our co-op pays for wholesale power. As consumers, buying at “wholesale” usually means getting the same product at a cheaper price. For electric power, the wholesale product is not at all the same. As power consumers, we typically use power at 120 or 240 volts. Our co-op’s wholesale power is delivered to Decatur as a 69,000 volt product. In fact, most of the costs of our co-op relate to the investments and annual expenses needed to literally transform the wholesale product to one that we can use and deliver it reliably to our meter.

The rate structure emphasizes use charges to meet overall revenue needs. The KWH rate encourage us to use energy wisely and to adopt more energy-efficient technologies (e.g., better insulation, more efficient water heaters, electric heat pumps, etc.).

Our electricity peaks in the cold weather months, when our heaters and lights are on longer. We are billed more when we use more, and our co-op has more monthly revenue to pay for the power it delivers to us. But, incentives presume the ability of the consumer to respond, which likely varies. Also, our co-op works to forecast seasonal temperature trends, but if actual weather proves warmer than forecast, revenue collected may fall short of needs. Finally, over-reliance on use charges may also lead us to us think that our wholesale power rates are out of control (which they currently are not; we continue to enjoy some of the lowest power rates in the nation). We should not over-rely on KWH charges.

Q7. What role do you think Solar Energy should play in OPALCO's future?

Solar power will be a valuable contributor to the web of energy resources that we will depend upon in the years ahead.

The key concern with all renewable resources is that the energy supplied is inherently intermittent. By contrast, as consumers, we expect electricity to be steady and stable, available anytime at the click of a switch, "on-demand". We especially rely on electricity between 6 AM and 10 PM (most of us), the so-called "High Load Hours, or HLH". In fact, our HLH use is greatest early in the day and in early evening, when the sun is not high overhead. Moreover, our needs peak in the dark, cold winter months when many of us rely on electric heat and our lights are on longer during the shorter daylight hours. The sun can seem a reluctant presence in those periods, especially up here in the Northwest.

Nothing new in all this, eh? So, what has changed? A lot.

Decades ago, the U.S. faced a severe energy shortage that spurred interest in solar power. It soon became clear that decades of R&D and orders-of-magnitude reductions in cost would be needed to make solar practical and competitive. Fast forward forty years and, surprise, those needed orders-of-magnitude reduction in cost have happened ... almost. In recent years, the focus has evolved to achieving economies of scale and standardized ways for installing solar and for preparing and managing the resulting energy for connection to the grid.

Even with all this, a key element has been missing ... storage. The "free" but intermittent solar energy must be collected and either stored or supplemented for it to become a steady supplier of energy, a process known as "conditioning" or "firming".

Today, utility-sized solar projects are close to being price-competitive with traditional sources of electricity generation, depending on the circumstances. Enter now our Community Solar Array (CSA) project.

Our CSA project is slated to be built later this year on our co-op's Decatur property, adjacent to where our wholesale power arrives from BPA. Contractors will install two modern, utility-scale, solar arrays. The energy produced will be purchased by voluntary member subscriptions, financing the up-front costs by giving participants a financial billing credit, at the usual member billing rate, over the life of the project.

The inclusion of a modular, utility-scale, battery makes this project especially useful and meaningful. Funded by a competitively-won grant from WA state, the battery will condition and time-shift the solar array output, absorb sudden spikes in energy demand, and backup critical substation and fiber optic systems. The grant also covers expert help from the Pacific Northwest National Laboratory (PNNL). PNNL will study how the battery-conditioned solar project helps our grid.

If the cost of the involved technologies continues to become more cost-competitive with traditional sources, similar units may become candidates for future, local, unsubsidized generation on our grid. Such use might help first for outage mitigation and recovery, then later expand to cost-effectively meeting part of our routine daily power needs.

Q8. What is your vision for OPALCO's subsidiary Rock Island?

Any successful vision for our subsidiary, Rock Island Communications, must be nested within the broader vision for our co-op's own evolution. Our co-op's vision for our local energy infrastructure is articulated in its Integrated Resource Plan (IRP) (opalco.com/wp-content/uploads/2015/12/Integrated-Resource-Plan-IRP.pdf). I believe the build-out taking root with our broadband subsidiary is a core capability for implementing our co-op's broader vision for our local energy grid.

Our co-ops long-range planning anticipates and welcomes the emerging intersection of energy and the internet known as the "Smart Grid". "Smart Grid" is not a new or local idea, but follows from the emerging "internet-of-things", where appliances, entertainment, thermostats, and the like can all be controlled by you, directly, from your electronic "devices", whenever you choose. It's taken some time to arrive; our co-op began actively planning for it back about 2001. And, it'll take some time yet to flourish, since most of us do not buy costly devices, appliances and such every day. Also, standards must be in place, so that many bits of technology will work together seamlessly while your data and transactions remain secure and protected. The aim of all this is not to impose some costly or prescriptive new regime from the top down, but to welcome the power of new technology to give YOU more control in how you use (and even share) electric power, in "real time".

Enhanced broadband and Internet communications are an essential part of the evolving "Smart Grid". However, a modest-sized utility like ours must carry forward this vision in an orderly, step-by-step fashion. Our co-op's role with new technology is not to be a pioneer, or even always a "fast follower", but to proceed persistently forward, in a step-by-step, practical, focused way, to move from vision to working reality.

Over time, our co-op has installed a fiber optic “backbone” network. It has also acquired LTE wireless spectrum space to handle wireless radio and phone capability. Together, these assets allow for improved communications between our offices and field crews, enhanced monitoring and control of remote equipment, and improved public safety by extending the reliable reach of the county communications system.

The acquisition of Rock Island several years ago is a big but challenging step forward. The vision for the Rock Island unit is articulated in its “Strategic Business Plan” (opalco.com/wp-content/uploads/2017/03/Rock-Island-Business-Plan-2017.pdf). Operating as subsidiary gives this unit substantial operating autonomy to market its broadband and related services throughout the islands. In so doing, Rock Island generates additional revenues to pay for both the communications infrastructure and the expertise needed to support our co-op’s long-range plans, while also helping to amortize our co-op’s prior investments in the fiber “backbone” and LTE communications “bandwidth”.

However, this recent acquisition remains a work in progress. Rock Island is in a challenging period of fast growth in building out its fiber and wireless distribution and expanding its customer base. It must remain intensely focused on its prescribed business goals and targets, with strict attention to its plans and timeline for becoming cash-flow positive and financially self-sustaining. And, its operations must remain aligned with the member and community-oriented values of its parent.

In doing so successfully, I look forward to Rock Island efficiently providing us a robust, secure, broadband capability that is accessible community-wide with utility-grade reliability, making available to our members the full advantages of an up-to-date 21st century power grid.

Q9. Ideas about improving communications between OPALCO and the membership, or about increasing member participation?

Communication that sticks occurs through people sharing ideas in which they can see themselves not just as observers, but as beneficiaries and influencers, and sometimes both.

Communications “devices” have become ubiquitous, offering us a reach that can be at once broad, interactive and immediate. Now a confluence is emerging of member access to robust and reliable broadband and a grid that can be interactive, including secure, real time transactions. Our members may imagine new, practical, low cost ways to use these new capabilities that they’d like to share, perhaps including locally-oriented new “apps”. Co-op sponsored, focused, digital media forums might also help share, refine, and shape new ideas into practical, useful Smart Grid applications that benefit both individuals and all members generally. For example, some might help senior islanders remain islanders longer. Others might offer a virtual tour of practical and successful local uses of the Smart Grid.

Another forum might simply share human interest stories about the history of electric power on our islands and the way that it has improved lives and shaped and strengthened our local communities.

Increased use of modern media helps move beyond top-down, one way messaging towards more user-oriented and initiated sharing, further encouraging member participation.