NORTHERN WASCO COUNTY PEOPLE'S UTILITY DISTRICT  
STRATEGIC PLANNING WORK SESSION  
JULY 17, 2018

PRESENT:  Dan Williams, President  
Connie Karp, Vice President  
Clay Smith, Treasurer  
Howard Gonser, Director  

ABSENT:  Roger Howe, Secretary

President Williams called the Strategic Planning Work Session to order at 1:00 p.m.

The following individuals were present during the Work Session:

NWCPUD Staff: General Manager Roger Kline; Assistant General Manager/Director of Power Resources Kurt Conger; Principal Engineer & Strategic Asset Planner Paul Titus; Key Accounts Manager Justin Brock; Director of Corporate Services Cyndi Gentry; Executive Assistant Kathy McBride; Senior Financial Analyst Lana Egbert; Finance Intern Brandon Deputy; and Chief Finance Officer/Director of Finance & Enterprise Risk Harvey Hall

 Visitors:  None

**STRATEGIC PLANNING SESSION**

General Manager Roger Kline stated that the District needs to prepare ourselves for what the region and electric industry is doing. He sent out a lot of pre-read materials to help the Board have a better understanding on what he is thinking. Kline noted that he is not trying to suggest any strategic examples from the pre-read materials provided.

Kline noted that the Board of Director makes the policy level decisions for the organization. The District, however, needs other decision makers to be a part of this planning process. Kline requested that the Board let the process be open to staff.

President Williams agreed. He stated that everyone here is equal.

Chief Finance Officer/Director of Finance & Enterprise Risk Harvey Hall introduced Brandon Deputy, Finance Intern. Deputy is a third-year student from the University of Washington. Hall noted that Deputy is immersed in the budget process; getting the budget template prepared.
At this time, Kline presented by PowerPoint the District's 2015 Strategic Plan. A copy of the 2015 Strategic Plan is hereto attached and marked as Exhibit 1.

Kline reviewed and discussed with the Board and staff the following areas of the District's 2015 Strategic Plan: Mission Statement; Our Beliefs and Core Values; Operating Strategies; Customer Service, Financial, Legislative and Regulatory, and Staff, Board and Workforce Development Goals.

Kline then reviewed with the Board the PwC Governance Insights Center's article entitled "How can boards tackle the Essential Eight and other emerging technologies, dated June 2017. A copy of the PwC Article is hereto attached marked as Exhibit 2.

Some discussion occurred regarding the District's load growth and the blockchain projects within the queue.

Kline reviewed and discussed with the Board the American Public Power Association's PowerPoint Slides entitled "The Leading Edge: Where is the Industry Headed?". A copy of said PowerPoint Slides are hereto attached and marked as Exhibit 3.

The next document reviewed and discussed was the American Public Power Association's PowerPoint Slides entitled "Transitioning Public Power Forward to the Future". A copy of said PowerPoint Slides are hereto attached and marked as Exhibit 4.

The next document to be reviewed and discussed was the PowerPoint Presentation entitled "Strategic Plan Scenario Planning. What does the future hold? Who do we want to become in that future?" A copy of Kline's PowerPoint Presentation is hereto attached and marked as Exhibit 5.

The following is a summary of the items that were added to a list for the Board and staff to revisit during this Strategic Planning update process:

- Update Financial Targets
- Resiliency
  - Cyber
  - Infrastructure
- Innovation
  - Electric Vehicles
- Communication and Interaction
  - Stewardship
- People/Community
  - Internal
  - External
- Governance
Kline stated that he will bring back, for the Board's consideration and discussion, a proposed Strategic Planning document.

There being no further business the Strategic Planning Work Session was adjourned at 2:52 p.m.

[Signature]
President

ATTEST:

[Signature]
Secretary
2015 STRATEGIC PLAN
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Strategic Planning Process

- Facilitated by Hometown Connections

Dates Board and/or Management Team met during 2015 Strategic Planning Process:

- August 17, 2015
- August 18, 2015
- September 15, 2015
- September 24, 2015
- October 15, 2015
- October 16, 2015
- November 5, 2015
- December 8, 2015
MISSION STATEMENT

To provide adequate supplies of energy, at affordable competitive prices with the highest degree of reliability, in the tradition of Public Power.
OUR BELIEFS AND CORE VALUES

Local Citizens championed and fought to create our People's Utility District. They believed--and we believe--in the public's right to own and control its electric utility.

Today, our values are a legacy from our public power heritage, as well as guideposts for a changing future. We believe in:

- Public ownership and local control
- Integrity
- Keeping power rates as affordable as possible
- Providing quality customer service
- Community involvement
- Stewardship of District and Regional assets and resources
OPERATING STRATEGIES

• Customer Service – “Customer Service is a relationship that is built on trust, courtesy and professionalism.”

• Financial – “High value financial metrics and benchmarks for the electric industry are the District’s foundation that provides the most affordable power and energy.”

• Legislative and Regulatory – “Effective involvement and meaningful participation in legislative and regulatory matters that are essential to the District’s ability to properly manage change and its impact.”

• Staff, Board and Workforce Development – “Successful hiring is the first step towards career and workforce development. Continuous learning and employee training provides the opportunity for developing skills, accountability and professionalism.”

• Power Resources, Delivery System and Infrastructure – “Strength, flexibility and reliability are the hallmark characteristics in design, construction and operation of the District’s generation, transmission and distribution system.”
Customer Service Goals

1. Develop and seek new opportunities with conservation programs

2. Ensure customer satisfaction

3. Maintain open channels for customer communications
Financial Goals

1. Maintain NWCPUD’s AA bond rating metrics

2. Maintain reserve levels

3. Maintain prudent, just and equitable rates to meet retail revenue requirements.

4. Continued diligence in managing risks
Legislative and Regulatory Goals

1. Define and communicate compliance requirements

2. Understand prospective legislative and regulatory matters that affect the utility

3. Advocate for laws and regulations that are consistent with the District’s mission and goals
Staff, Board and Workforce Development Goals

1. Promote a culture of continuous improvement
2. Provide feedback to employees on work performance
3. Ensure open lines of communication
4. Manage staff levels to meet growth
5. Enhance and formalize a Board Development Plan
Power Resources, Delivery System and Infrastructure Goals

1. Pursue opportunities for greater power supply self-sufficiency
2. Maintain a highly reliable transmission and distribution system
3. Be positioned to integrate larger loads and optimal plans of service
4. Safeguard the utility from cyber threats and stay current with industry standards
How can boards tackle the Essential Eight and other emerging technologies?

Emerging technologies are transforming companies. What should your board know about them?

Companies are looking at the next generation of digital technologies as a way to get ahead. They’re changing their strategic plans and making investments—and boards need to weigh in. To do so, directors should understand which technologies are most relevant to their company and build their knowledge about them. Is your board up to speed?
As CEOs look to the future, what is top of mind? Innovation. Nearly a quarter of CEOs around the world singled out innovation as their top priority in the coming year, according to PwC’s 20th CEO Survey. And that was followed by digital and technology capabilities.

Overseeing company strategy is one of the board’s most critical roles. Today, that can’t be done without a working knowledge of emerging technologies. The board needs to be able to dig into how the company is planning for the future, how it’s investing in emerging technologies and how it’s confronting associated risks like cybersecurity.

Getting the right people around the table

How does management see the role of emerging technologies in the business? Which emerging technologies will impact the industry and company? What will the future look like with these technologies? Directors should be asking these questions—and they need to be asking the right people. Too often, the CIO and his or her staff are the only ones involved.

While the CIO is a valuable resource, emerging technologies affect the entire business. These technologies will impact strategy, customer engagement, operations, people and talent and, importantly, compliance. The CEO, business unit leaders, legal counsel and other senior management need to be involved in the discussions.
Emerging technologies: the Essential Eight

What advances in technology should companies and boards be paying attention to?

To help companies and boards answer this question, PwC analyzed more than 150 emerging technologies and came up with what we call the Essential Eight. Every company and industry is affected differently by technologies. But these are the eight that we believe will have the most significant global impact across industries.

The Essential Eight are:

**Artificial Intelligence (AI)** — An umbrella term for technologies that perceive and learn from their environment, then act based on that information. AI includes robotic process automation, machine learning, natural language processing, and neural networks, among other technologies. The most critical difference between AI and general-purpose software is that AI enables machines to respond on their own to signals from the world at large, signals that programmers do not directly control and therefore can’t anticipate.

**Augmented Reality (AR)** — The viewer sees real-world images, but also sees or hears relevant “overlaid” digital information. For example, a warehouse worker wearing AR-enabled glasses may be able to look at a closed crate and see details about the products inside.

**Virtual Reality (VR)** — VR headsets and VR-enabled smartphones immerse users in a computer-generated 3-D environment. Spatial data, such as the data that produces a rendering of a building or a product design, becomes more real and understandable.
Drones—Drones are small aircraft without a human pilot. Many focus on drones’ delivery possibilities, but data collection and data service may be where they make their mark. Drones extend existing aerial photography and sensor data collection methods.

Blockchain—Blockchain offers a decentralized ledger of all transactions across a peer-to-peer network. It can be used for fund transfers and tracking online voting, without a central certifying authority like a bank.

Internet of Things (IoT)—Physical objects such as devices, vehicles or appliances are embedded with sensors, software and network connectivity. The objects can then collect, exchange, and act on data, usually without human intervention.

3D printing—Three-dimensional objects, based on digital models, are formed by layering or “printing” layers of materials. 3D printing has the potential to turn every large enterprise, small business, and living room into a factory.

Robotics—Robots with enhanced sensing, control, and intelligence can be used to assist, augment, or automate human activities. They’re moving beyond the factory floor. Robots now interact directly with customers and employees.

74% of US CEOs say that technology will either significantly impact or completely reshape competition in their industries over the next five years.

Three steps directors can take to tackle the Essential Eight and other emerging technologies

How can directors get more involved in company strategy and the impact of emerging technologies?

1. Understand the emerging technology priorities.
Which emerging technologies are on management’s radar? Are any of the Essential Eight? Which ones are most relevant to the company’s strategy, operations and customers? Discussions with the CEO and senior management are important to focus the board’s attention on the prioritized technologies. Boards will want to ask:

- Is the CEO taking an active leadership role in the company’s use of emerging technologies?
- Who decides which technologies to focus on? Are any external parties engaged?
- What criteria does management use to evaluate technologies? How does management prioritize them? Is it a systematic process? Does management consider the greater business context?
- Does the company have an emerging technologies road map? Is it kept up to date? How comprehensive is it? Is it multi-year?
- Is the company prototyping and test-piloting any new technologies to better forecast their impact?
- Does the board agree with management’s prioritization of technologies?

Technology must be viewed as a competitive weapon, one that merits regular discussion and decision-making in the boardroom and among the C-suite.
2. Increase the board’s Digital IQ.

Board members can use internal company resources to build their knowledge about the prioritized technologies, including the Essential Eight. They can also turn to third parties for help. They should ensure that appropriate time is spent to get educated, which can include making time on board agendas or even holding special meetings to do deeper dives on emerging technologies. Boards will want to ask:

- How does management keep its pulse on the prioritized technologies, including Essential Eight?
- What risks and opportunities are related to these technologies?
- Who does management collaborate with and what activities do they engage in to raise their Digital IQ? Do they tap into the startup, venture capital and technology labs communities, as well as other third parties? How are the Essential Eight and any other new technologies being used by competitors and others in the industry?
- Are board members spending enough time raising their Digital IQ leveraging management or third parties? Does the board have access to individuals with the appropriate skills to oversee technology, whether on the board or outside the boardroom?
3. **Build technology into the board’s strategic oversight process.**

The pace of technological change is swift. Directors will want to understand and agree with management’s plans to track, and act on, prioritized technologies. By including these technologies in the ongoing strategy review, the board can keep current and address related risks. Boards should ask:

- How does the board ensure the company has a sustainable and competitive innovation strategy?
- How do the prioritized technologies drive growth against competitors? What about new competitors?
- What is the company’s action plan, timeline and estimated cost for focusing on prioritized technologies? Who is accountable for the plan?
- New technologies will impact customer engagement, operations, people and talent and compliance. Has the board evaluated those impacts? Does the company’s broader business strategy reflect any needed changes?
- How will the board monitor whether the company is successful with any prioritized technologies? Which metrics will it use?

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**PwC perspectives: IT oversight for boards**

To help directors execute effective IT oversight, read PwC’s *Directors and IT guide*, which outlines a six-step structured and efficient oversight process.

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To learn more, visit our Technology hub: insights for corporate board members for additional resources about the Essential Eight technologies and digital transformation.
Find additional resources here:

- PwC’s Next in Tech hub
- Tech breakthroughs megatrend: how to prepare for its impact
- 2017 Global Digital IQ: Emerging technology insights
- Directors and IT

Contacts

For a deeper discussion about how this topic might impact your business, please contact:

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The Leading Edge: Where is the Industry Headed?

Public Power Forward Summit
December 12, 2017 | 8:30 a.m.

Robert Cromwell
Interim Power Supply & Strategic Planning Officer
Seattle City Light
Topics

- Overview of the Pacific Northwest system
- Regional electric utilities and Balancing Authorities
- Federal law that governs the four states
- Regional market and Energy Imbalance Market
- Distribution systems and the customer interface
- Technology adoption and our customer relationship
- Seattle City Light – How are we adapting?
Pacific Northwest Electric Utilities

- Bonneville Power Administration (BPA)
  - 59,300 Gigawatt Hours
  - 133 Wholesale Customers
- 136 Public Power Utilities
  - 78,800 Gigawatt Hours (includes power from BPA)
  - 2.4 Million Customers
- Six Investor-Owned Utilities
  - 84,900 Gigawatt Hours
  - 3.9 Million Customers
## Northwest Balancing Authorities

<table>
<thead>
<tr>
<th>Utility/Organization</th>
<th>Retail Sales*</th>
<th>Customers</th>
<th>Generation*</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPA</td>
<td>59,300</td>
<td>165</td>
<td>79,619</td>
</tr>
<tr>
<td>PAC</td>
<td>54,318</td>
<td>1,800,000</td>
<td>60,959</td>
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<tr>
<td>Idaho Power</td>
<td>14,196</td>
<td>534,000</td>
<td>12,175</td>
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<td>PSE</td>
<td>20,445</td>
<td>1,128,000</td>
<td>24,607</td>
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<td>Avista</td>
<td>8,497</td>
<td>377,000</td>
<td>11,495</td>
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<tr>
<td>PGE</td>
<td>18,971</td>
<td>860,000</td>
<td>22,323</td>
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<tr>
<td>Seattle City Light</td>
<td>9,400</td>
<td>500,000</td>
<td>5,971</td>
</tr>
<tr>
<td>Mid-Columbia PUD’s</td>
<td>7,920</td>
<td>103,000</td>
<td>20,347</td>
</tr>
<tr>
<td>Tacoma Power</td>
<td>4,581</td>
<td>176,000</td>
<td>2,417</td>
</tr>
</tbody>
</table>

*Gigawatt hours
Northwest Balancing Authorities
Market Ideas and Discussions

• Market Creation for the Future
  o Attempts at Regional Transmission Organizations
  o Complications to the Idea
  o BPA and Public Power Utilities
    ▪ West Coast or Northwest only
    ▪ Day Ahead Markets
    ▪ Hydro Only System

• Voluntary or Legislated
The Distribution System Evolves

• Focusing on the wires business at a time of change
• Customer usage changes – LED and energy efficiency penetration
• Energy efficiency and conservation role
  o Do we still need to buy it or just promote it?
• Distributed generation
  o What is the utility’s role?
• Meeting customer power quality reliability expectations
• Environmental goals and carbon reduction
Advanced Metering Integration

• Resources move from the field to the office
• The development of data to better understand our customers
• The business relationship with self generation and storage customers will be transformed
• The third party interface through product integration and interaction for comfort, security, and efficiency
• Customer information and billing system overhaul
• Social media and portals
<table>
<thead>
<tr>
<th>Market Driven</th>
<th>Generation</th>
<th>Power Supply</th>
<th>Transmission</th>
<th>Transmission Distribution</th>
<th>Consumer Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market</td>
<td>Market</td>
<td>Market</td>
<td>Regional Transmission Organization</td>
<td>Load Serving Entity</td>
<td>Advanced Metering Infrastructure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Northwest</th>
<th>BPA/Seattle City Light</th>
<th>BPA/Seattle City Light</th>
<th>BPA/Seattle City Light</th>
<th>Seattle City Light</th>
<th>Seattle City Light</th>
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<tbody>
<tr>
<td></td>
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<td>Money to Consumers</td>
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<td></td>
<td></td>
<td>Value of service</td>
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<td></td>
<td></td>
<td></td>
<td>Value of reliability</td>
</tr>
</tbody>
</table>
Business Challenges – Electric Rates

- The retail interface and technological advancements need to be preceded by new billing systems and rates design.
- We have not yet created rates for the future of deep EE and high EV / Solar PV penetration.
- Difficult to embrace a 21st century model of customer interaction with 20th century rate design.
- We will have to interface with energy production behind the power interface of our systems and cost recovery structures.
- If we don’t change, our customers will.
- System growth costs need to be allocated fairly and provide customers accurate price signals.
Costs vs. Revenue

Out of Balance

Residential Service Cost vs. Rate Revenue

- Energy: 93%
- Distribution: 22%
- EE Incentives: 5%
- Discounts & Programs: 28%
- Customer Service: 2%

Revenue

Cost
Technology Deployment at Seattle City Light

• Automation on feeder circuits
• State-of-the-art network operations and protection
• Network growth – new Denny Substation
• Non-wires alternatives to capacity adds (DERs)
• Electric vehicle systems and support
• Mass transit electric vehicles
• NeighborGrids
Electric Vehicle Systems and Support

• City of Seattle Drive Clean Initiative
• Seattle City Light Public DC Fast Charging Stations Pilot Program
Climate Change Adaptation Plan

• Ensure that Seattle City Light can continue to deliver reliable power
• Assess vulnerabilities of infrastructure and operations
• Identify critical actions to increase climate resilience
• Implement near-term actions to adapt to a changing climate
Actions to Address Key Climate Vulnerabilities

• Get Informed: Assess seasonal changes in energy demand and water availability

• Get Prepared: Harden infrastructure and enhance emergency response to floods, landslides, and wildfires

• Take Action: Department of Energy Partnership for Energy Sector Climate Resilience participant
Transitioning Public Power Forward to the Future

Public Power Forward Summit
December 11, 2017 | San Francisco, California

Sue Kelly
President and CEO
American Public Power Association
Association Members—A Diverse Community

• 1,400 member public power utilities, ranging from very large to very small
• Median size: 1,977 meters
• The common thread: public power utilities are vital to their communities, not only providing power, but supporting key community priorities, reflecting community values, supporting local economies
Why Are We Here?

• We are seeing rapid changes in our industry:
  – New technologies
  – New competitors
  – New ways of living
  – New customer choices and expectations

• “Business as usual” will not be enough in this new environment; we need to anticipate what customer needs/wants will be and move to supply them
  – “I skate to where the puck is going to be, not to where it has been.” Wayne Gretzky
Electric Utility Industry Outlook—

- Unclear federal regulatory policies
- More distributed generation (DG)
- Expanded use of new technologies: advanced grid, storage, Electric Vehicles (EVs), smart meters
- Increasing industry complexity—many new players (can be partners or competitors)
- Flat (or even declining) load growth in most regions due to increased energy efficiency (EE) and demand response (DR)—a new reality for our industry
Electricity Utility Industry Outlook (cont’d)

• Customer expectations are increasing; lower tolerance for outages
• Need for new investment to make grid smarter
• Cyber/physical security concerns must be addressed or we will face the consequences
• Workforce turnover is an issue
• Low level of knowledge by public and many policy makers of how we do what we do—leads to unrealistic expectations
What More and More Customers Will Want (Commercial and Industrial)

- Industrial and commercial customers increasingly want green/sustainable energy to meet corporate goals
- Following lead of Tesla, Mercedes-Benz, Apple, Google, Facebook, Walmart
- They are entering into direct contracts with suppliers and aggregating their loads to buy renewable power supplies
- If we do not help our customers meet these goals, they can do it themselves
What Some Retail Customers Already Want (and More Will Want in the Future)

• Increasingly, residential customers want to:
  – Use technology to control their electric usage
  – Tell Siri or Alexa to pay their electric bill
  – Invest in their own onsite power and storage facilities, so they never experience an outage

• Public power utilities have to up our game — if we cannot provide these services on our own (or with each other), we need to partner with third parties that have the necessary products and skills to do this
One View of the Utility Future

• “Cleaner” resource mix (fewer fossil fuel resources, more carbon-free/renewables)
• More demand side resources (DR, EE, DG) and microgrids; more decentralized approach (under the banner of “resilience”)
• Full time-of-use rates/smart meters/smart appliances/energy storage/latest technologies—informed and empowered customers with many choices
• New uses for electricity—e.g., transportation
But There Are The Unavoidable Facts…

• You need transmission and distribution (and storage) to support this; the grid will need substantial investment (not to mention cyber/physical security!), and the costs must be recovered.

• We already have substantial investments in long-lived wholesale generation assets.

• Consumer appetite for increased utility bills is very limited at best.

• Any loss of reliability will not go down well.
How Can Public Power Keep Up?

- We must recalibrate our thinking
- We need to redefine our relationships with our retail customers, thinking beyond just “keeping the lights on and the beer cold”
- Can no longer stay in our “comfort zone”--on our side of the meter, providing basic electric service and sending bills; we must diversify the menu
We Need to Be Prepared to...

• Develop new rate designs to meet increased levels of DERs
• Handle flat and even decreasing demand for electricity from traditional loads
• Help customers reduce their usage through energy efficiency, demand response
• Develop and support new loads--electric vehicles and even heating
• Incorporate storage to expand use of renewables and better align demand and supply (could even be the humble water heater?!)
Public Power Forward

• To help our member utilities deal with these changes, the Association developed its “Public Power Forward” strategic initiative
• Our Goal: Make public power utilities the service providers of choice in their communities
• As public power utilities, we have some built-in advantages:
  – Community owned and controlled
  – Not-for-profit--no separate class of shareholders that must be “fed”
• But we need to capitalize on our strengths
Public Power Forward: Association Member Toolbox

• Policy research and analysis for members: what are DOE, states, other utilities/sectors doing on DG, DR, EE
• Provide options/case studies/best (and not-so-best) practices; share the lessons learned!
• Make sure federal and state policymakers and thought leaders understand public power’s views
• Communication toolkits: to educate member communities and retail customers on these issues
Research Available to Members

• Public Power Forward page on Association website (https://www.publicpower.org/public-power-forward) has many resources, including new white papers on:
  – Recent policy developments on DG, including state updates
  – Comprehensive overview of battery storage
  – Electric Vehicles (December 13 webinar as well)
Association Provides the Tools, Members Make the Decisions

Utility members must decide when/how to revise their rates, services and operations to:
• offer their retail customers more options such as green power, DG (including solar PV—community and rooftop), DR (including storage), and EE
• modernize utility operations; add new loads (electric vehicles, for example)
• Make sure interests of all customers are protected when doing this
This Summit Is An Important Part of Our Public Power Forward Effort

• Learn from industry technology leaders
• Learn what policy makers think
• Learn from each other, ask questions
• Help the Association help you in 2018 and beyond—what do you need us to do to best support you?
• Take what you learn home, and figure out what works for you—no two public power utilities are alike!
Moving Public Power Forward

• Collaboration will help us all move forward
• We need to demonstrate our *continuing* value to the communities we serve (remember, memories are short!)
• Public power has a great opportunity if we stay true to our ideals and roots while adapting our mindsets and services to this new era!
Strategic Plan
Scenario Planning

What does the future hold?
Who do we want to become in that future?

July 17, 2018
AGENDA

Review of six potential futures and their associated conditions as related to energy.

Discuss how our local system and community could respond if they became true.

Decide which future is most likely from our perspective(s) and decide where resources should be applied to address the outcomes.

Board’s View Questions, discussion and direction going forward
1. **Mad Max** – Columbia Generating Station is closed due to radiation leaks, the lower snake dams are breached due to a new biological opinion, federal carbon pricing regime implemented, and natural gas drilling using fracking technology is outlawed federally due to environmental concerns.
   a) Wholesale Electric Market: High prices due to lack of natural gas and lower supply in the region combined with carbon policies
   b) Wholesale Gas Market: High prices due to low production from conventional drilling technology
   c) BPA Tier 1 Rates: High rates due to less generation to spread costs over, slightly offset by better prices for secondary energy
   d) Tier 1 System: Lower by 1,600 MW firm energy (loss of approx. 25%)
   e) Alternative Resource Pricing: Capital costs remain steady for conventional generation, renewables continue to be cheaper year-over-year
   f) Carbon and Environmental Policies: Carbon pricing implemented at $40/ton of CO₂
   g) Utility Load Growth: Some growth isolated in certain areas, but continued low growth due to energy efficiency and economic conditions
**THE GREEN MILE**

The Green Mile – Federally mandated 50% RPS implemented for all utilities, feed-in tariff for distributed generation federally mandated, federal carbon pricing regime implemented, all coal plants must be retrofitted with best emissions technology available or shut down.

a) Wholesale Electric Market: Prices remain steady at current levels with offsetting forces of zero marginal cost renewables build out and increased prices for conventional generation

b) Wholesale Gas Market: Prices remain low due to low demand from both residential and utility sector, continued price reduction in drilling technology

c) BPA Tier 1 Rates: Steadily increasing rates due to continued need for capital investment and no support from secondary sales, lower customer load put on BPA due to distributed generation at local utilities

d) Tier 1 System: Remains steady at current levels

e) Alternative Resource Pricing: Large investments in renewable generation drives costs even lower, conventional generation remains steady for capital costs

f) Carbon and Environmental Policies: Carbon pricing implemented at $40/ton of CO₂

g) Utility Load Growth: Large load loss due to feed-in-tariff and customers incentivized to put solar panels or wind generation behind-the-meter
IT’S A WONDERFUL LIFE

It’s a Wonderful Life – Canada admits they were getting a great deal and give in on the Columbia River Treaty, economic conditions vastly improve across the country driving load growth, environmental and renewable advocates play less of a role in policy making.

a) Wholesale Electric Market: Prices increase due to increased demand from load
b) Wholesale Gas Market: Prices increase due to high demand from both residential and utility sector
c) BPA Tier 1 Rates: BPA finds another low-cost source of funds and is able to control expenses to keep rates steady for an extended period of time, increased surplus sales help with increased generation due to Columbia River Treaty
d) Tier 1 System: Increases of 400 MW are realized from the revamped Columbia River Treaty
e) Alternative Resource Pricing: Generation costs remain steady for both renewable and conventional generation
f) Carbon and Environmental Policies: No major changes to current policies
g) Utility Load Growth: Load growth returns across the region as economic growth spurs all sectors to increase electric demand
**WALL STREET**

**Wall Street** – The world economy booms and interest rates jump to 10%, commodity prices break out of their slump rise across the board, fracking technology drives natural gas prices even lower.

a) Wholesale Electric Market: Market prices stay low from abundant natural gas supply

b) Wholesale Gas Market: Prices depress even further to historical lows

c) BPA Tier 1 Rates: The combination of the high interest rates and low surplus energy sale prices drive BPA rates through the roof year over year

d) Tier 1 System: The federal system remains the same as today

e) Alternative Resource Pricing: Cost of generation increases as the prices for steel and concrete rise with the global market

f) Carbon and Environmental Policies: No major changes to current policies

g) Utility Load Growth: Load growth returns across the region as economic growth spurs all sectors to increase electric demand
**BACK TO THE FUTURE**

**Back to the Future** – Tesla releases a new electric car that is both affordable and relieves any range anxiety along with a breakthrough innovation in battery storage making residential batteries both affordable and effective, federal feed-in-tariff for solar generation implemented, the emergence of micro-grids begins to take hold.

a) Wholesale Electric Market: Market is swamped with excess generation driving prices down

b) Wholesale Gas Market: Prices depress even further to historical lows

c) BPA Tier 1 Rates: BPA is faced with little to no secondary sales as well as a dwindling Tier 1 sales picture driving rates higher

d) Tier 1 System: The federal system remains the same as today

e) Alternative Resource Pricing: The increased investment in solar drives down the price of that generating source, all other conventional generation remains the same

f) Carbon and Environmental Policies: Feed-in-tariff implemented federally for solar generation

g) Utility Load Growth: Load growth is retracting as customers invest in both solar and batteries in mass numbers moving peak load times to off-peak hours and little to no demand outside of extreme weather situations
**TRADING PLACES**

Trading Places – BPA prevails in the courtroom and a biological opinion that relaxes restrictions on the federal dams is passed, the Columbia River Treaty is renegotiated for a more favorable NW position, a federal carbon tax is established, natural gas exports drive up the domestic price of gas.

a) Wholesale Electric Market: Prices increase due to carbon taxes and increased prices for natural gas

b) Wholesale Gas Market: Exports drive prices to a more worldwide price, pushing domestic prices higher due to global competition

c) BPA Tier 1 Rates: BPA rates begin to decline with the increased surplus sales revenue combined with increased generation from the system

d) Tier 1 System: Increases of 400 MW are realized from the revamped Columbia River Treaty and another 100 MW from the new biological opinion

e) Alternative Resource Pricing: Generation costs remain steady for both renewable and conventional generation

f) Carbon and Environmental Policies: Carbon pricing of $40/ton is established federally

g) Utility Load Growth: Load growth remains low
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What Kind of a Utility Does NWCPUD Want to Become?

- Ensure large customers cover their marginal costs plus a net margin that can contribute to expanded utility program offerings
- Smooth glide path over time: acquire all customer growth without sharp negative cash or rate impacts
- Loads in Oregon are generally growing – enable load growth in NWCPUD service area to benefit from low-cost NWCPUD power (give all customers the opportunity to drink from the watering hole)
OVERVIEW
NORTHERN WASCO COUNTY PUD STRATEGIC DIRECTION

Strategic Dials

Key Strategic Dials – The art of finding the optimal balance

- Rates
- Reliability
- Risk
- Revenue
- Regulatory Compliance