Avista's Integrate Resource Plan Public Meeting

February 24, 2021

These are results of the poll questions given to the audiences in both the webinar and breakout room sessions.

Webinar Poll Questions

1. **What would you prioritize among the choices below, acknowledging they are all important?**
   - Environmental Issues: 32
   - A Reliable System: 75
   - Affordability: 33

2. **Which Avista system provides more energy to its customers?**
   - Natural gas: 66 (this answer is most correct)
   - Electric: 69

3. **If Avista were to offer a voluntary program to charge higher prices during 4:00 pm to 8:00 pm in exchange for lower prices in other hours would you be interested?**
   - Yes: 77
   - No: 59

Generation and Reliability Breakout Room

1. **When Avista acquires new generation resources- where should they be located?**
   - Indifferent to where resources are located: 6
   - All of the above: 26
   - Within our local communities: 9
   - Within our service territory, but not in our local communities: 6
   - Outside the service territory (i.e. another state or Canada): 1

2. **To meet reliability needs in the next 5 years, how should Avista meet this requirement**
   - Acquire natural gas generation with a modest environmental footprint- medium cost alternative: 33
   - Acquire storage resource with low operational environmental footprint- highest cost alternative: 11
   - Utilize customer outages to stabilize the grid- lowest cost alternative: 2

Affordability & Equity Breakout Room

1. **How much of your electric bill should go towards assisting or improving the lives of individuals and communities who are economically disadvantaged?**
   - $0 per month: 6
   - $5 per month: 9
   - $10 per month: 6
   - Other: 4

2. **What does an equitable transition to clean energy mean to you?**
    - Lowering their energy rates: 9
    - Making their homes more energy efficient: 12
    - Build clean generation resources within their community: 3
    - Beautification of Avista assets: 1
    - Other: 1

Natural Gas System Planning Breakout Room

1. **If you could no longer use natural gas, which fuel would you likely use in its place?**
    - Electricity: 12
    - Hydrogen: 2
    - Propane: 8
    - Renewable Natural Gas: 6
    - Wood: 6
    - Other: 3

Environmental Breakout Room

1. How should Avista best balance customer costs and environmental stewardship?
    - Do the minimum to meet environmental requirements and keep energy rates as low as possible: 1
    - Be a partner and leader in environmental stewardship for a mod rate increase: 5
    - Marginally exceed requirements for a small rate increase: 1
    - Make environmental improvements and reduce impacts no matter the cost: 1

2. What is the most important environmental issue for you related to Avista?
    - Reducing greenhouse gas emissions: 1
    - Minimizing air pollutants such as particulate matter, volatile organics and nitrous/sulfur dioxides: 3
    - Being stewards of the water and natural resources of the Clark Fork and Spokane Rivers: 4

Energy Efficiency Breakout Room

1. In exchange for slightly lower energy costs, are you are interested in the utility controlling your thermostat?
    - Never: 9
    - No more than 20 hours per year: 1
    - Yes, if I can override the request if I'm too cold or hot: 18

2. What is most important to you when you invest in energy efficiency for your home?
    - Increase comfort: 4
    - Reduce emissions: 4
    - Savings on your bill: 20

Questions from emails, breakout sessions, and chat box

Net Metering Questions	**Avista Response**
For those of us who have solar panels on our roofs and are producing more electricity than we use, what plans do you have to compensate us for our excess electricity?	Customers who participate in net metering currently receive kilowatt hour (kWh) compensation for their generation. Generation produced by customers in excess of consumption is held in a 'bank', allowing kWh credit to be used in future months as needed. The intent of net metering is to offset your own usage, based on this intent any remaining kilowatt hour bank is reset annually in March, according to Schedule 095 in both Washington and Idaho. There are no current plans under the net metering program to provide compensation beyond the banking provision. Please reference Schedule 095 in both Washington and Idaho for further details. https://myavista.com/about-us/our-rates-and-tariffs
Electric Vehicle Questions	**Avista Response**
Is there provision for increasing use of plug-in vehicles (hybrid and pure electric)?	Yes. Avista has a transportation electrification (TE) plan publicly available at: www.myavista.com/transportation This plan includes Low, Baseline and High adoptions scenarios for light-duty vehicles considered in Appendix B. starting on p. 81. Given the current state of policy support, industry investments, utility support, and local geographic and demographic considerations; we expect the trajectory of adoption to track between the medium and high scenarios in Washington, and between the baseline and low scenarios in Idaho.
What would it take to add incentives for charging at preferred times of the day, when other demand is less?	As demonstrated in the EVSE pilot and discussed in the TE Plan, Avista has shown that utility programs leveraging EVSE installations can accomplish this with participating customers. A new rate incenting off-peak charging may also be very effective, as demonstrated in other utility pilots and studies. Avista will continue to develop capabilities, with a goal to shift 50% or more of EV peak loads to off-peak in a cost-effective manner, by 2025.
How can you encourage the installation of more places to charge such vehicles, like in high use areas (central parking lots, shopping malls, park-and-ride lots)?	Avista will install, own and maintain a backbone of this charging infrastructure, up to 50% of the assessed market need. A variety of other programs and incentives including "make ready" investments, and a new commercial EV rate, will help encourage additional private investment. See the TE Plan, pp. 45-54.
To reduce company greenhouse gas emissions, is there a plan to convert Avista's vehicle fleet to electric?	Yes, Avista plans to electrify its fleet as it may be done reliably and cost effectively. See TE Plan pp. 72-73.
Has the waste from batteries from electric cars been added to the percent of emissions as a long term cost?	Avoided emissions resulting from light-duty EV adoption is shown in the TE plan on pages 41-42, based on Avista's generation mix. Likely emissions in the future based on effects from battery waste and other factors are very uncertain but may be incorporated in later studies and estimates as more

	knowledge and certainty is gained. See TE Plan pp. 22-24 for discussion related to battery research and development, including second-use and recycling. The future state of battery technology and production will most likely differ greatly from the current state.
Policy Questions	**Avista Response**
Why doesn't AVISTA push back against Washington State's population-reducing polices? What plans do you have if the population is killed by lack of heat?	Avista isn't aware of any legislation that is specifically and explicitly intended to reduce population. Our engagement in public policy is first and foremost focused on the cost-effective operation of our energy system and the economic vitality of the communities we serve. Avista has an obligation to serve its customers electric and natural gas demands. When developing its resource plan, it determines the expected customer demand and the amount of resources and types of resources that can actually meet this target using standard utility practices. Avista plans for resources to meet a 1-in-20 standard. This means it has enough resources to meet all customer load in 19 of 20 possible extreme weather events.
A bill was recently introduced in WA to eliminate natural gas in new residential and commercial buildings by 2030 and to replace gas by heat pumps. At colder temps, heat pumps stop producing heat efficiently and can cause a spike in demand. Your presentation includes natural gas. Please comment.	Avista shares your concern about eliminating natural gas as a customer choice for residential heating. Avista agrees that electric heat pumps lose their efficiency at lower temperatures and an "electrification" policy that requires customers to convert their natural gas heating systems to electric heat pumps will increase electric peak loads, among other impacts.
With commercial and industrial businesses, the main targets of efficiency efforts, will the harsh legislative regs. drive commercial and industrial businesses our of our region? Result, loss of jobs as well as revenue losses?	Avista appreciates that certain policies will impact the financial viability of businesses and shares the concern that such policies will have dislocation impacts on business and workers. Avista's energy efficiency analysis shows commercial and industrial businesses have opportunities to save energy economically while maintaining current requirements by installing more efficient technology. Avista's energy efficiency programs will assist these customers with cost effective financial incentives. Lastly, the expected energy cost savings from these programs will help customers be more competitive.
Environmental	**Avista Response**
How do we protect our environment from natural gas companies that use fracking and other means to obtain natural gas?	Avista purchases natural gas from the wholesale market and it is delivered through the pipeline system. Natural gas from all sources is mixed together, and gas from wells that used fracking technology makes up the majority of natural gas currently. The environmental issues associated with drilling for and producing natural gas are subject to local, state and federal laws and regulation, which have increasingly been focused on the fracking process. Avista carefully manages natural gas once we receive it from pipelines. We were a founding member of the EPA's methane challenge in demonstrating our leak detection and

	maintenance efforts. In addition, natural gas producers are increasing efforts to reduce emissions of natural gas production and make this energy source more sustainable. See https://www.aga.org/natural-gas/clean-energy/ for more information.
Would Avista look at modern nuclear technology to create a carbon free source of power, electricity? What about Gen IV Nuclear? Is there any movement toward building these very clean energy plants near this region?	Avista considers modern nuclear energy in the context of our IRP analysis to determine if any specific offerings fit our resource needs. Currently Avista finds this technology not to be cost effective. Like others, we are watching to see how new emerging nuclear technology performs and how the cost changes as the technology develops.
I would like to know how Avista's plans align/don't align with Inslee? In particular, the use of natural gas, which I understand Inslee wants to limit or get rid of entirely.	Governor Inslee's energy policy priorities generally become part of the Washington State legislative landscape. We continue to engage in legislative settings to promote clean energy solutions that are affordable and which support reliability for our customers. Regarding natural gas, a specific bill was introduced during the 2021 legislative session. While this bill has not advanced, we will continue to work with our legislators and regulators on ways to address emissions associated with natural gas.
What kind of environmental impact (as well as machinery and maintenance cost) is there on the act of compressing natural gas?	CNG is natural gas compressed by an electric or gas-powered compressor to less than 1% of the original volume. While energy is needed for such compression and there are emissions associated with the compression process, the net effect of using CNG as a transportation fuel is reduced emissions. All fuel delivery systems, including CNG, include ongoing maintenance costs for machinery.
What is the problem with the Colstrip plant that it is my understanding, backs up the intermittent power from wind farms like the one in Pullman? Is it really that "dirty"? If the tribes don't want to run it, can't Avista lease it? Can you build a new state of the art coal plant? Coal presently provides over 60% of all electricity in the U.S. Our plans are super scrubbing in the U.S.!!	In the context of this IRP, we are focusing on the fact that Washington State law prohibits the delivery of coal-fired energy to customers after 2025. Colstrip is also subject to other state and federal environmental regulations, which continue to evolve. As one of six owners of the plant, Avista cannot independently determine Colstrip's future. We will continue to evaluate the role that Colstrip plays in meeting our customers' energy needs, and also how Colstrip's future impacts communities, including Tribes, in Montana. We rely on thermal generation from Colstrip, natural gas-fired plants, and our biomass plant in Kettle Falls, along with our significant hydro resources, to back up intermittent renewables. Consideration of this need is one of the key elements in our IRP.
Does Avista's goal for carbon neutrality consider methane emissions?	Avista's stated clean energy goal focuses on electricity. We are working to reduce emissions associated with natural gas and developing additional strategies with that in mind. Our natural gas IRP discusses the current state of these efforts, which we expect to build on and communicate further. Also included in both the natural gas and electric IRPs are estimates for the methane emissions as part of the upstream emissions from fuel suppliers and transporters.
Could you still sell coal energy in Idaho?	Yes. Currently there are no prohibitions currently in Idaho for serving our customers with coal-fired electricity.

Are there perceived or anticipated issues with relicensing the existing dams in the network?	Avista relicensed our Clark Fork hydro project (two dams) in 1999, receiving a license from FERC for 45 years. We relicensed the Spokane River hydro project in 2009, receiving a 50-year license. While we don't have "relicensing" issues, we are implementing agreements with numerous local, state, federal and tribal partners on both river systems. These collaborative efforts imbed flexibility in what specific projects we undertake, for the benefit of our customers and the natural resources associated with these rivers. Please see https://www.myavista.com/about-us/celebrate-our-rivers for more information.
Is VOC worse than CO2?	It depends on the volatile organic compound or VOC. Methane, the primary component of natural gas, for the first 5-10 years is 100 times the greenhouse gas potential of CO2. Refrigerant gasses are much more potent greenhouse gases.
So the decrease by 2030 in Greenhouse Gas Emissions is mostly from changes away from coal?	Yes, Avista's forecasted reduction in greenhouse gas will be primarily from exiting the Colstrip Coal plant. The second largest reduction could be utilizing other resources rather the buying power from the Lancaster Generation Station that uses natural gas.
How many other partial owners of the coal power producer are there?	We are 15% owner units 3 & 4. There is a total of 6 owners.
Rathdrum Prairie area, any coordination for solar or geothermal heat pumps. Plans to send out pamphlets, for swamp coolers, on demand water heaters, or ways to transition to higher demand.	We have a number of programs to help customers to reduce energy use. We work with developers regarding solar for residential and industrial plans in various ways. The IRP includes some of those plans. In the IRP, we look to fill resource needs by reviewing available options for new energy efficiency and demand response programs. Our energy efficiency team looks at developing programs based on the results of those plans. We are also adding another advisory group in Washington to reach out to communities for input about ways we can be most helpful to them within the next year. Some incentive programs are prescriptive, like lighting, while others are customer specific and require working with engineers to implement (usually for commercial and industrial customers). We have information on our website for programs for energy efficiency as well as placing solar on homes. There's a solar evaluation estimator tool that will provide solar potential for specific addresses in our service territory.
What effect with demolishing 4 dams on the low Snake River have on electric resources?	Avista does not purchase power from the Snake River Dams. The impact of the current proposal on Avista seems at this time to be indirect. However, its effect on communities served by the company could be significant. It could also have regional ramifications of clear interest to Avista. Gauging the precise extent and nature of the proposal's potential implications is difficult without more specific information about replacement generation and other measures (conservation, demand response, transmission upgrades) that the proposal does not yet define.
As a Washington-based company, will they be required to discontinue ownership of Colstrip based on the new laws that are under discussion (should those new laws be passed)?	Avista is required to stop delivering coal power to Washington customers in 2025 per the Clean Energy Transformation Act in 2019. The law does not require us to discontinue ownership of the plant and Avista must make future decisions about the plant in conjunction with the other owners.

I'd like to hear about the storage technology for variable renewables.	Avista includes many energy storage technologies in its resource planning as options to meet customer demand. These options include lithium-ion, pumped hydro, liquid air, hydrogen, and flow batteries. These technologies may be pursued in the future if they are an economic method of meeting our customer demand.
Does Avista have plans to address the impacts to fisheries due to the construction and operation of the hydroelectric facilities? The dams on the Spokane River are initially responsible for the complete extirpation of salmon in that basin. Avista should have some responsibility for recovering those runs and the communities that were impacted by their loss.	All of our hydro facilities, including the two dams on the Clark Fork and 6 on the Spokane River. Went through an extensive licensing process working with local tribes, state and federal agencies, and hundreds of stakeholders ranging from 5 to 7 years to work out the issues involved with the dams. Every week we work with the numerous tribes regarding the fisheries and bringing the steelhead back up to the upper regions. We do a lot of work together over those issues.
Solar produces less GHG short term. We do not know the environmental cost of solar waste from worn out panels long term.	This is outside of our required planning but think we will see this issue in upcoming plans regarding total life-cycle costs and the wastes associated with worn out solar panels.
Are there any plans to partner with Conmat for renewable natural gas plans?	There are opportunities regarding this, but none with Conmat specifically at this time.
One path to substantial GHG emissions is the deployment of EVs on a large scale, not only Avista's service fleet but also to private citizens but most of the Northwest doesn't have the EV charging infrastructure to support this market change. Is Avista working to address this because that is a massive increase electric demand?	Avista is committed to the development of EVs in our service area and its own fleet. The IRP includes this additional expected demand as part of our plans, but actual EV adoptions will depend on customer demand. Avista is committed to breaking down barriers to increase its adoption. Please see the EV section of these questions and answers for more details about Avista's EV plans.
Also, upgrades to street lights to reduce energy consumption?	Company-owned streetlights have been switched to LEDs. These 5-year implementation programs started in Washington in 2015 and Idaho in 2016.
As an Idaho customer, I am hoping that the stricter laws in Oregon and Washington do not equate to my power needs being met by a higher percentage of coal-based power. As new laws are passed, and since Avista has a plan to phase out from Colstrip, is it possible to assume that this coal-based power supplier will be closed?	Avista has no plans to increase coal generation as a percentage of Idaho's energy portfolio at this time. Avista does need to acquire new resources to replace capacity beginning in 2026; it is possible, but highly unlikely coal will be chosen to meet this need for Idaho customers. This issue will be brought up with the Idaho Public Utility Commission and they will review and approve any plans for phasing out coal power being used to serve Idaho customers with input from customers.
I'd like to hear a report on the "state of the salmon" and an acknowledgement of the successes in increasing salmon runs after hugely costly efforts.	Avista isn't directly involved with salmon recovery efforts. For a state of the salmon, refer to this federal site https://www.nwcouncil.org/reports/columbia-river-history/planningfishandwildlife.
Could Colstrip be leased by Avista and run by the utility if the tribes don't want to do it? Could a new state of the art back up plant for wind farms and solar, be built at a reasonable cost?	Avista is a 15% owner in Colstrip Units 3 & 4, the remaining owners are other utilities and energy companies. Due to Washington law, coal cannot be used to serve customers after 2025 and new coal is more expensive than other technologies available to serve Idaho customers.
Equity & Affordability	**Avista Response**

How does equity play into these decisions? Equity of what?	The Clean Energy Transformation Act (CETA) directs utilities to ensure "*that all customers are benefitting from the transition to clean energy: Through the equitable distribution of energy and noneenergy benefits."* RCW 19.405.040(8) "Equitable distribution" means a fair and just, but not necessarily equal, allocation intended to mitigate disparities in benefits and burdens, and based on current conditions, including existing legacy and cumulative impacts, which are informed by the assessment described in RCW 19.280.030(1)(k) from the most recent integrated resource plan. In accordance with the rules, Avista staff is currently forming an Equity Advisory Group that will advise the utility on equity issues including, but not limited to, vulnerable population designation, equity indicator development, data support and development and recommended approached for the utility's compliance with WAC 480-100-610 (4)(c)(i). This advisory group will help determine the answer to the equity question concerning how Avista serves customer's energy needs.
Do you plan to raise your prices instead of using your profits to pay for these upgrades?	Avista must invest in new resources to comply with state law and to maintain a safe and reliable system. When the company invests capital in these assets, the State Commissions determine if these expenses are prudent. If they find them prudent, Avista will get recovery of these expenses, if the expense is a capital investment, the company may earn a return on these investments. The Commissions also set the profit levels that Avista can earn up to.
If WA makes you get rid of coal and gas, how will the rate payers be charged for the increased cost on new "green" energy infrastructure? Will Idaho have to pay for the "green" energy that WA and OR want? Or can you make them pay more for the increase in green that they crave and cost so much more?	The cost to comply with both Washington and Idaho laws will be reviewed by each state's regulatory commission. It is expected the costs for state compliance will be borne by the customers within the state where additional costs are required. Both commissions specifically review rate requests to ensure that customers from their respective state are paying only their fair share.
How does equity play into these decisions? Equity of what?	Avista is forming an Equity Advisory group to ensure our most vulnerable customers are protected and benefit from the ongoing development of our electric system. This advisory group will also help shape how equity will be incorporated into future IRPs.
Transmission/Distribution	**Avista Response**
Does Avista have new builds/upgrades in distribution/transmission planned for the near future?	Avista has a publicly available transmission plan at the following website: https://www.oasis.oati.com/avat/index.html. Major Transmission projects planned for 2021 include: • Rebuild approximately 13-miles of 115kV Transmission between our Othello and Warden Substations. • Build new approximately 12-miles of 115kV Transmission between our Saddle Mountain and Othello Substations. • Rebuild approximately 7-miles of 115kV Transmission between Addy (BPA) and our Gifford Substation (1st Phase of 3-year project in Colville area).

	• Rebuild approximately 10-miles of 230kV Transmission between Oxbow (IPC) and our Lolo Substation (1st Phase of multi-phase project). • Integrate new 115kV Irvin Switching Station in the Spokane Valley. • Complete replacement of underground 115kV cables in downtown Spokane. • Replace approximately 3-miles of 115kV Transmission south of Springdale, WA. • Many smaller projects across the service territory for both Transmission and Distribution projects are included in the Oasis weblink above.
What is Avista's plan to invest in burying power lines? Will it be part of this 20-year plan?	While this is an important discussion as a method to address tree-related distribution outages, burying distribution lines is not a component of the Resource Plan. For new construction, Avista undergrounds facilities when appropriate. Avista has no systemic plans to underground existing facilities at this time.
Resource Selection	**Avista Response**
Can Avista team up with other energy providers and universities to get large federal grants to develop and field test new energy storage systems?	Avista has partnered with several universities in Idaho to fund research in storage. Avista has also been a recipient of Washington State grant funding and field tested a vanadium flow battery in Pullman and is currently developing a project in the U-district of Spokane to integrate smart building designs and energy storage.
Does Avista have new 24/7 electric production builds/upgrades planned for the near future?	Avista's current resource plan does not anticipate any baseload or 24/7 facilities. Current plans include new peaking resources, renewable resources, energy storage, energy efficiency and demand response in addition to our current resource mix.
How is Avista expanding to meet these needs (Rathdrum prairie), and how will it affect the reliability and price of our utilities? How are you dealing with the increase of population (and its need for power, natural gas, …)?	From a power perspective, Avista must connect anyone requiring service in our service territory, so the electrical and natural gas infrastructure will be built to meet the demand as it develops.
Does demand add in the 30% plus increase in population?	Population is a key component of a utility load forecast. Avista's economist conducts a forecast of future population and energy growth within Avista's service territory as part of the load forecast. This forecast is updated each year and all electric and natural resource plans developed meet this forecast's estimate for energy needs. Higher and lower load growth
Why is solar + storage pushed in the late 2030-early 2040s timeframe?	While this technology is available today, the cost of solar plus storage compared to other alternatives, including renewable alternatives without storage, is higher priced until that time based on our current cost assumptions. In the next 10 to 15 years these technologies are expected to be more cost competitive. We review and update these cost components every two years in the IRP cycle.
I think outside area resources particularly should be assessed. Especially Montana.	Avista includes wind in Montana in the IRP and has found it to be a viable and cost effective resource alternative to meet customer needs. When Avista issues request for proposals by

Are outside area resources being assessed? (asked multiple times)	energy suppliers in the future, this will determine if this resource is the best option.
Also, the Grand Coulee Dam is not even using their full capacity, it is clean energy, and cheap. Is it being utilized?	Avista does not receive power from Grand Coulee Dam. This power is controlled by the Bonneville Power Administration (BPA) and is sold to other utilities. Avista does buy power from BPA on a day-to-day basis and may buy power from BPA on a longer-term basis in the future if it is a less costly option than from other facilities.
Forest biomass- is this on our radar? Is this a storage resource?	Yes, forest biomass is an important resource to Avista. We are looking to upgrade our Kettle Falls biomass facility in 2026 and we also analyze new biomass resources in the IRP.
How can Montana wind resources be utilized? Also consider Rathdrum Prairie as a wind resource	Avista has found Montana wind to be a cost-effective option to help meet resource needs. Although, actual wind acquisition from Montana will depend on a completive bidding process. The Rathdrum Prairie's wind resource is not economically viable compared to other locations at this time.
Solar with storage- what is the storage with solar?	Storage with solar is a lithium-ion battery system coupled with a solar farm. The reason for colocation is due to tax credits and the sharing of interconnection costs.
Are there any limitation to transmission capacity specifically Canada or Montana?	There are always transmission constraints depending on location. Avista studies potential transmission interconnection points to test if the resource can connect or what will be required to facilitate the interconnection. More renewables will require more transmission or upgrades to existing to existing transmission resources.
Heard natural gas generators area being scrapped- please clarify if this is accurate given you have natural gas plans in your resource plan.	Avista is unsure which plants are being retired, although Avista does have plans to retire or end contracts with some of these resources it currently uses. Given current economics, we expect some construction of new and more efficient natural gas plants in the future.
Planning and deployment of storage why so late in comparison to building natural gas	Storage provides many options, but the ability to meet our peak planning requirements depends on several factors including costs and the duration of the storage device. We mainly need energy production and storage in winter peak months and could be more reliant on storage earlier, but it will need to be either lower cost or a modestly higher cost compared to longer duration capability resources such as new generation or pumped hydro storage.
Intermittent supply during peak demand times- Do you need back up these resources- are we doubling the energy production?	During operations we carry reserves to help handle variation from intermittent resources. These reserves are not necessarily doubling the generation required. For peak demand times we estimate a "peak credit' for the intermittent resource types which is a measurement of how well we can expect the resource to help us meet peak needs when they occur. Typically this is a relatively low percentage for renewables.
Electric Cars- The load forecast doesn't seem to reflect this increase	Avista forecasts future EV demand and EVs are planned for and expected. Each EV could add 5 to 10 kW of load to the system. This is similar amount of power to an electric water heater. Since the amount new EV's are unknown, Avista reevaluates its EV forecast each year and runs high and low EV scenarios to better understand how our plans could meet changes in that part of the load forecast.
All resources have problems and nothing is free. Nuclear is large piece of the US	Avista continues to evaluate nuclear and it is not being chosen in this plan due to high expected cost. Nuclear power also has

energy supply and the INL has DOE contract for modular nuclear. What is Avista's thought on nuclear.	additional risks from construction and waste disposal is an ongoing concern. Avista will continue to study nuclear in future IRPs and will update assumptions as more information about the modular nuclear systems is available.
Natural Gas- what is the source near Vancouver, Canada- what is the source of this Gas	Avista's natural gas for power production comes from Alberta. The Vancouver location referred to is likely the Sumas trading hub, where natural gas is traded between British Columbia and the I-5 corridor. Natural Gas may come from British Columbia wells, but it could go both ways.
What is a peaker?	A peaker is natural gas-fired generator that typically generates during peak load events. Its typically lower cost to construct but is often more expense to operate. More efficient natural gas-fired generation is available, but it is more expensive to build and would need to run a higher percentage of the time to justify the higher costs.
What about nuclear and hydrogen fusion- Is the carbon footprint of nuclear construction to great?	Nuclear is evaluated, but the cost is too high to be included at this time. Avista studied hydrogen resources in is IRP, but not hydrogen fusion. Avista also evaluates the carbon footprint of all resources when it looks to add to the system for both construction and operations.
Do we have enough geothermal resources?	Avista has not identified any local options for geothermal. Southern Oregon, southern Idaho and Nevada have good options for geothermal. So far, the costs of these projects have been higher than other alternatives in our competitive bidding processes when the transmission costs to get geothermal resources to Avista are included.
Pumped storage/hydro; Is this option more of rate scheme then a resource due to pumping and generating at different times of the day? What about losses of pumping- you're not creating energy- correct	Pumped hydro can take advantage of different pricing throughout the day or week. It could also be used for meeting peak load events and provide reserves for intermittent generation. Yes, pumped hydro does not create energy. It loses approximately 20% of its energy when operating, but it provides a large amount of capacity and energy over a much longer period of time than other storage resources.
How are outages used to meet resource adequacy?	Outages would be the lowest cost alternative to meet resource adequacy but planning for outages does not make for a reliable system. There are costs involved with making a system more reliable, and we are always trying to weigh the risk and cost trade off of making the system more reliable.
BPA had to generate its hydro at 1 GW higher then its demand- is that the case for Avista	Avista holds reserves for wind, solar, and load variations. To help with this issue, Avista is joining the energy imbalance market to pool resources with other utilities to handle this variation across a larger number of utilities and reduce the needs and costs across the wider system.
Microgrids	**Avista Response**
What is Avista's plans for microgrids?	Avista has no immediate plans to implement microgrids on a large scale but continue to test and monitor trends and changes in microgrid technology. This summer we will energize a small pilot microgrid in cooperation with a local university. This microgrid pilot will inform decisions about their use in the future.
Security	**Avista Response**

What are your plans for hardening the electrical system against terrorists or other people capable of damaging the key very large transformer's cooling systems with high powered rifles or explosive drones or malware?	Avista has a comprehensive security program based on nationally recognized security frameworks and standards to manage cyber and physical security related risks. These standards address protecting, detecting, responding and recovering from physical and cybersecurity threats. In addition, we work with industry and government partners to ensure we are aware of emerging security risks and how best to address them.
PLEASE comment about protection from hacking which COULD shut down energy supply (such as elec.)	Avista has a comprehensive security program based on nationally recognized security frameworks and standards to manage cyber and physical security related risks. These standards address protecting, detecting, responding and recovering from physical and cybersecurity threats. In addition, we work with industry and government partners to ensure we are aware of emerging security risks and how best to address them.
Natural Gas (or Renewable NG)	**Avista Response**
To what extent is linepack a factor in scheduling?	The amount of gas in the natural gas distribution is a factor in scheduling as linepack provides the ability to flow the gas for the necessary demand. As more linepack is needed, more supply will be brought on to the system to meet the demand and keep the linepack at necessary levels.
What is the impact of recent pipeline project changes (on linepack/scheduling)?	The system is constantly modeled and monitored to ensure the supply is available to our firm customers when they need it.
Can natural gas systems be merged with hydrogen technology for longer terms storage?	Yes, in some systems in the US and Europe, limited volumes of pure hydrogen is being blended directly with the natural gas. These systems are being studied for wider application. In other systems, hydrogen is first combined with waste CO2 to make methane before being blended. In this application, the limits are much less restrictive and much more hydrogen can be integrated with the natural gas.
What are the percentage of RNG or Hydrogen gas you want to attain in your natural gas supply and what is the timeframe?	Avista is in the process of developing our goal and will share it soon.
Will blending hydrogen into natural gas affect, reduce the btu's?	Yes, the overall heating value of the blended gas will be somewhat less than natural gas that does not have a hydrogen blend. Regardless, the customer is charged on the amount of energy consumer and not on volume.
Energy Efficiency & Demand Response Questions	**Avista Response**
What of Avista's plan for existing buildings to be more efficient so they don't lose or gain heat all the time?	Avista's resource plans identifies continuing energy efficiency programs. Many of these options include improving cost effective weatherization of homes. Please visit Avista's website for information on current energy efficiency rebates and programs. In addition to prescriptive offerings, commercial and industrial customers, can also access customized rebates through their account executive based on their unique energy needs and equipment.
I've been looking at solar as a potential option to reduce energy demands, but learned natural gas was the main usage	Avista offers natural gas energy efficiency rebates such as Energy Star appliances, space and water heating. In addition, there are rebates for LED lighting and smart power strips to

we have and the ROI was negative. What offsets would be helpful on the Natural Gas side to replace our demand.	reduce phantom loads. More information can be found on Avista's website at https://myavista.com/energy-savings/energy-savings-advice. From a resource planning perspective, in addition to energy efficiency on the natural gas side of the business, options include hydrogen and renewable natural gas. On the electric side of the business, reducing dependence on natural gas will require long term storage solutions to store renewable energy for use at a later time when those resources are not available.
How does Avista propose to deal with split incentives where the owner of a building passes heating and cooling bills to the tenants, but the tenants don't have long term incentives to benefit from capital investments in energy efficiency of the buildings and transportation systems?	This is a difficult question that Avista and other utilities continue to grapple with how to touch this hard-to-reach market. Utilities, regulators and legislators have been working on this issue, but there is no clear consensus yet on how to handle the split incentive problem.
As you say, DR has been around for many years. Why will it take until 2024 to launch these in Avista's territories?	Avista has conducted several pilot programs for Demand Response but has not pursued these programs due to their higher cost then alternative resource acquisitions. The latest analysis shows these programs may be cost effective as an option to meet Avista's capacity needs in 2026. We reevaluate the costs and benefits of Demand Response programs for each IRP and will continue to do so.
Regarding utility ability to control a homeowner's HVAC system, does that apply to given hours during a peak event? i.e., noon to 5 p.m.? Also, how would-this work? For example, if the peak event as heat related, would this be a device placed on the HVAC that would allow Avista to alternate AC to a fan-mode in 15-minute intervals?	The program design to control a home HVAC system was modeled to be used during peak heating and cooling times depending on the season for a two to four-hour time frame per participant. This can be done with either a temperature set back or by cycling the HVAC system. The customer impact is a two-degree offset during the requested/event period. Heating or cooling above/below the thermostat set point, ahead of the event period, (often called pre-heating or pre-cooling) was not included in the program design we evaluated. We modeled this program in two ways, one with temperature control and one with cycle control. Either program would be time based and would include specific parameters around when those programs would operate and how customers could opt out for a specific event.
Is there a service you would recommend to evaluate the energy usage of my home, such as efficiency of heating system ducts/furnace (gas), hot water (gas), and home insulation?	For residential customers, a home energy audit is the best way to understand ways you may be able to reduce energy consumption in your home. This is a free program, however, it is currently suspended due to the pandemic.
How is Avista compensated for EE? That is, how does Avista deal with the natural conflict between selling energy and conserving it?	All costs related to energy efficiency are funded by customers through a bill adjustment called the "EE Tariff Rider". All customers contribute to these expenses based on the amount of energy they use that in turn will lower the cost for all customers. Avista's conflict of selling energy versus conserving energy is mitigated as long-term profits do not relate to the amount of customer sales, but rather the investments it makes to its system that are prudent investments as determined by the state regulatory commissions.

How will Avista do more to incentivize energy efficiency for middle income and low income customers? will there be rebates for homes converting to ductless heat pump systems from natural gas? or rebates for insulating window inserts?	For low income customers, Avista fully funds energy efficiency programs such as weatherization and appliance upgrades. Community Action Agencies, such as SNAP for Spokane County, income-qualifies customers and administers the programs. For other customers, information on current energy efficiency programs can be found on Avista's website at https://myavista.com/energy-savings/energy-savings-advice.
Regarding EE upgrades, is that available only through rebates or is on-bill financing also an option? If so, would that be applicable to residential customers and business customers?	On Bill Repayment (OBR) is a new program Avista is implementing with a third-party lender. Avista will invoice and collect the monthly payment and remit to the lender for qualifying energy efficiency projects. This program will initially only be available to Avista's residential and small business customers in Washington State and is expected to be launched by the end of 2021. Avista is also looking at offering the OBR program to Oregon and Idaho customer in the future.
Can you explain what on-bill reimbursement is?	On bill reimbursement is when a customer chooses to have their Avista incentive payment for their qualifying energy efficiency measure credited towards their bill.
Sounds like we're doing what utilities do and just keeping up with regulation. Are we actually being proactive to lobby for EE improvement statewide, etc. in each jurisdiction or are you just reacting to state requirement?	Avista is part of multiple organizations to increase the amount of energy efficiency programs and offerings in the northwest. These include the Northwest Power and Conservation Council and the Northwest Energy Efficiency Alliance.
Many utility providers have developed effective "deemed and calculated" DR programs, such as more efficient charging of forklift batteries or switching to efficient lighting, so why can't Avista adopt some of those sooner than 2024?	Each utility plans for the most cost-effective programs for their unique system. Costs and customer needs are often different for each utility. Demand Response programs are different than Energy Efficiency Programs. Demand Response stops energy use for a period of time or shifts it, versus energy efficiency programs using less energy to get the same amount of work or process completed. Avista's first DR programs will be rate related programs to incent use in non-peak hours. Over time as more controllable load is added to the system, it is likely additional Demand Response options will be available.
Is Avista working with Energy Trust of Oregon to increase available options?	Avista partners with the Energy Trust of Oregon for its natural gas energy efficiency programs in Oregon.
Speaking of tariffs, what's happening with feed-in tariffs? Is Avista advocating for those?	Feed in tariffs guarantee a price paid for energy delivered to the utility. Currently the only program similar to this option is generation provided under PURPA (Public Utility Regulatory Policies Act). No other state regulation requires a feed in tariff at this time.
Haven't heard anything about neighborhood-scale geothermal, e.g. small thermal differential circulation pumps for neighborhood-scale heating and cooling.	Neighborhood scale geothermal is an option for reducing heating or cooling costs. Avista welcomes developers to pursue this option and it may qualify for energy rebates.
I haven't heard anything about neighborhood-scale renewable energy, such as solar gardens, Swedish-style neighborhood heating and cooling, and property-assessed clean energy financing (PACE).	PACE programs are financing mechanisms implemented by local governments that allows property owners to finance energy efficiency and renewable energy improvements through a property tax mechanism. Washington and Oregon have passed legislation allowing these programs, however, no counties in Avista's service area have an active PACE program. Avista is currently developing an On-Bill Repayment (OBR) program that will be available to owner occupied

	buildings for both residential and small business customers in Washington State by the end of 2021. Avista is also looking at possibilities to offer OBR for our Oregon and Idaho customers in the future.
Has Avista ever thought about putting timers on hot water heaters? I have one on mine and it's amazing how it keeps my energy down.	Avista has evaluated controlling water heaters and at this time found it to be non-economic compared to other options. Although Avista continues to evaluate this option and other options, so it may become cost effective in future plans.
What about AMI? Any EE benefits?	Yes, AMI energy efficiency benefits include customers reducing their usage from having access to near real time information and conservation voltage reduction on Avista's distribution system. The customer program for AMI energy efficiency has partially been implemented with the availability of near real time usage on-line. Usage alerts and notifications, as well as data analytics for "always on" usage is under development and will be made available soon. Conservation voltage reduction is currently in use in Avista's day-to-day operations. Additional AMI benefits, including energy efficiency, can be found on Avista's website at https://www.myavista.com/about-us/smart-meters.
Is Avista considering another community solar project as they once had in the past?	Avista is continuously evaluating the market and opportunities that will provide more renewable options to our customers. At this time, no additional community solar projects are planned.
When's the next energy fair?	The energy fairs have been suspended due to the pandemic, but Avista intends to continue the energy fairs in the future when it is safe for customers and employees.
Reliability	**Avista Response**
How will the lights stay on during a 10-day winter event when it is cold and dark with no wind or solar production?	Avista's current plans to continue to use natural gas and its hydro resources to maintain system reliability for extreme winter events until long-duration storage resources become available at an affordable cost.
What are Avista plans to move more of the power grid from reliable power sources like hydro, gas, coal and nuc, to unreliable sources like wind and solar?	Avista is adding renewable resources to its generation portfolio but will ensure reliable service by continuing to invest in capacity capable resources such as hydro and energy storage to ensure system reliability and resource adequacy.
What percentages of our power sources will be based on these unreliables in the next 10, 15, 20 years?	Avista's current resource plan estimates 78% percent of retail sales will be served by clean energy resources., A portion of this generation will be from wind and solar, as well as hydro and biomass.
What protection should be increased, to avoid the types of problems Texas just encountered? Are different plans needed to prepare for damage from wildfires?	Avista must ensure its generating resources and natural gas supply are designed to withstand cold temperatures. Because of our climate, this has already been done. The second protection is to ensure Avista plans to add or maintain enough generation to serve customers during high load hours like extreme winter weather. The purpose of the resource plan is to determine the mix of resources needed to serve loads in these types of events. Avista is currently working with outside agencies and regulators to develop a wildfire plan but is well positioned to repair and replace damage to infrastructure from various causes.

Do you expect the amount of renewable energy potential here to increase substantially? If so, how do you estimate the storage needed, for times when wind or solar or hydro. is supplying less than usual?	Avista expects to add significant new renewable resources including wind and solar, as other regional utilities are also planning to do. The plan calls for at least 400 MW of additional wind and nearly 500 MW of solar over the next 24 years. The amount of storage will depend on the actual acquisition of specific resources and whether Washington will require real-time delivery of clean energy to its customer. For now, Avista's resource plan only plans to add 266 MW of storage, but if costs decline additional amounts could be added. The resource plan uses several modeling tools to determine how much energy can be relied upon for wind, solar and hydro resources.
what is the provision to back up when wind and solar are not available	Avista plans to use its hydro, biomass, and natural gas resources to meet this demand from intermittent resources. In the future energy may be stored in batteries, pumped hydro or another technology to assist in meeting this demand.
Why is the assumption so strongly held that resources are limited?	Resources are not necessarily limited, but rather limited at a particular price or cost or during periods of extreme weather events.
If you don't see the same future for WA, OR, and ID as what Texas is experiencing--why not? How will AVISTA and these states avoid the same fate? How do you expect to do the same program and expect different results?	The major difference between Avista and the Texas market is Avista plans to meet extreme cold and hot events, second Avista plans for resource adequacy. Texas does not have a regulatory requirement to ensure capacity during cold or hot weather events. Another major issue in Texas was fuel suppliers, specifically for natural gas, were not prepared and their equipment was not designed for cold weather events. In Avista's case, its natural gas supply comes from Canada whose suppliers encounter cold weather events every winter.
With the fossil fuels used to operate wind energy, the problem with disposing of them when they are obsolete, and seeing the fiasco in Texas, should wind even be a consideration?	While wind may not have the reliability benefits of some other resources, the technology can still be economic to replace energy needs in other time periods.
General	**Avista Response**
Is or was Bill Gates an investor in AVISTA?	Avista does not comment on individual owners of its stock.

Comments provided in breakout sessions, email, or chat feature

Rate Structure
Inverted energy rates.
Hopefully people only home in the evening won't get penalized for using power at that time, but rather people fortunate enough to be home during times of lower use & lower costs could get the bonus of a lower rate.
Use-and-rate schedules are unnecessary. They are a recipe for prejudice. We have the resources to meet the needs of all people. Avista is playing games with the seriousness of human life.
Policy
I wish that AVISTA would honestly not move forward with the April plan. I am sure you can resist and not comply with a bureaucratic environmental agency or with elected representatives who are in office based on computerized counting procedures that do not mirror the interest of the public which was shown by candidate signs in yards this fall.

Reliability
I never want to hear from you that we're experiencing power outages because of reliance on green energy sources.
We need to use all sources of energy.
Finally, I'm certain the survey question regarding reliability is knee jerk to the situation Texas, even more than the outages due to the recent wind event.
Our grid isn't isolated, like in Texas.
Affordability & Equity
I'm not interested in wind/solar construction. It has its place, but it is not 24/7, w/out expensive and environmentally destructive storage.
isn't all this a windy way of saying you're going to charge us more and just in time for the new minimum wage that has driven the cost of goods and services up to match. but wait grasshopper, no one raised the checks of the retired and disabled. only the prices went up which lowered the living standard of the most defenseless among us. so now you want to join slaughter.
ROFL "Affordability"
Environmental
Move to a ZERO carbon dioxide emissions format ASAP.
I'm not interested in wind/solar construction. It has its place, but it is not 24/7, w/out expensive and environmentally destructive storage
Use renewable energy to affect the mixture of natural gas and hydrogen in pipeline systems.
I am very concerned about Governor Inslee's plan for green energy.
Wood biomass is pollutive.
I don't think that cost is a factor that should limit the use of Small Modular Reactors. Wind machines are expensive too. They harm birds. They harm people. They require bare land. They are unsightly. They are not biodegradable. They are a fool's errand.
Commitment to environment is a vague statement that doesn't give any information as to what you will do or not do.
What about the waste from windmill blades and old solar panels?
The United States of America has been quite clean thus far; we do not need to become more so. We need to maintain our life. This is getting to be a matter of survival. All electricity is electricity; it would be a fool's game to tell customers they are getting their electricity from wind or sun and not from hydroelectric dams. That is all bogus marketing. Telling customers they can pay for "green" energy is a credit that is all on the books and this is not tied to reality. Any way that financiers can play with money and that customers can be billed more or less for fees or peak loads or anything else is all "make-work" schemes for billing departments, computer programs, marketing webinars like these public forum meetings, which are a ploy to lead us to think we can stop what you are already planning to implement because you are "committed." Your company has co-opted the best, most noble vocabulary and is using it to name your plans which will actually destroy the lives of people and the economy of America. A sample of your vocabulary includes "power production," "load growth," "lens," "focus," "committed."
The shut down of the Colstrip plant in Montana is a real sore point with many in our circles. "Storable" consistent coal still accounts for over 60% of all the power generated in the U.S., and to pretend that intermittent wind and solar can in the near term (let alone ever??) replace coal without natural gas, nuclear and hydro expansions, is irritating to many of us. The tribal influence of less than 10,000 members in our region, over the welfare of millions of U.S. citizens, is of great concern to us. I had put in some questions about Colstrip that I hope get publicly answered. Is the power generated by U.S. plants like Colstrip really that "dirty"? (U.S. companies are leaders in scrubbing pollutants out of exhausts.) Is the public being sold a false narrative in that regard, due to political pressures? Could that plant be leased by Avista and run by the utility if the tribes don't want to do it? Could a new state of the art back up plant for wind farms and solar, be built at a reasonable cost?
Resource Selection
Liquid Metal Batteries, Pumped Hydro, Solar incentives, net metering buy backs over used power

CANCEL ALL PLANS FOR ADDITIONAL WIND TURBINES, I am totally against the removal of the J C Boyle Dam, Copco Dams 1 & 2, and Irongate Dam, I also support solar power, but within limits. I support properly designed nuclear power. And I support Avista's natural gas projects.
Avista clearly does not want to discuss “nuclear options”. I keep hoping that the miserable and complex failure of WHOOPS won’t sour this region forever on that possibility.
Since you have already seen the evidence of catastrophic failure in Texas, how does that not put you in legal jeopardy for future failures in WA, ID, and OR? Wind is a joke. There can be no wind. The turbines can freeze. The blades are made of fiberglass. They are so big, they must be brought in one per truck. Fossil fuels are needed to transport them. They are not biodegradable. Just like China, we need to forestall any changes from our present energy forms until we have more technologically advanced forms of energy. Wind and sun are NOT advanced forms. Our present federal-level administration is not legitimately elected. We are fools to limit ourselves to obeying their suicidal goals. We need to think other than wind and solar. It is primitive. Your questions are lose-lose. The multiple choices offered are not innovative and are not evidencing out-of-the box thinking.
General
Avista should look into internet and television and other services by using the resources that are already in place for remote area within the Avista service area
Choosing among affordability, environmental responsibility and reliability is a false choice. These need to be balanced, as you say.
Why is the assumption so strongly held that resources are limited? If we (mankind) are able to use the powers of the mind to make new discoveries of the physical world around us, why don't we get out of this doomsday outlook which says we are limited to the energy platform we are already on? We ought to be spending our time and strength building on the steps we have already taken to be able to land on the Moon and voyage to Mars, in order to get new forms of energy available to us. Specifically, environmentalists have blocked nuclear power energy. However, NuScale's Small Modular Reactors are as clean as wind, solar, and are cleaner than any fossil fuel. I think AVISTA ought to push back against Washington State's population-reducing polices. Our country was founded to promote the General Welfare of all the people, but Washington State, Oregon, and California's governors and Democratic Party controlled legislatures are horrifically proving they care nothing for the general public.
60% of my electric bill is how much money I already spend on gas. Ride sharing and mass transit is the answer.
I'm concerned about safety and shocked at the answers of indifference in where plants are located. I voted for away from communities.
When does Avista plan to stop extorting their customers then later boasting about record profits?
Avista overcharged customers by a total of $43 million, according to a ruling by the Washington State Court of Appeals.
The Washington Utilities and Transportation Commission has directed Spokane-based Avista Corporation to refund $8.4 million to electric and natural gas customers in Washington state.
The conversation is legitimizing foolish options. We are not limited the way you think we are. Please focus on scientific discovery of new ideas, like Benjamin Franklin and Thomas Edison did. We will not be able to maintain what we have because the production of these "green" "clean" energies are production-dependent on our present system.
More noble vocabulary being misused to promote the possibility of a Texas-type disaster: resources, reliability, clean, attentive to, responsible to the environment, generation, strategy, scalable, ensure, pre-credit, production history, resources, renewable, reduce carbon foot-print, need energy, build our needs, deliver, service territories, demand response, retiring existing resources, social cost of carbon, voluntary offering, energy efficiency, advancing technologies, lowering costs, hydrogen blending, opportunity matures, forecasted. All of this vocabulary puts a great-sounding face on plans for your reduction of perfectly good forms of energy in present use and divvying it out piece-meal to the result that the people will be diminished and in grave danger of dying off from supposedly new ideas, which are actually nothing at all beyond just sitting outside in the cold. I think "carbon-footprint" is a false boogey man that AVISTA is foolishly bowing down to and carrying the rest of the people to do the same. I think your assumptions and definitions need to be re-visited and reviewed. You are limiting yourselves, I believe.

Ecologists and environmentalists have a foolish and damaging overall philosophy and set of assumptions. Basically, they believe what Malthus said, namely, that the earth is not able to support a growing population. Actually, God said to be fruitful and multiply. He has made man with the ability (of his mind and powers of observation) to DISCOVER new ways to harness the natural laws and physical qualities of the earth. Please re-think your philosophy.
I found the meeting very informative. Another example of how Avista is a stellar partner in our community. I was interrupted in my second breakout meeting but I still have a question; “What does your company anticipate the impact to be from the forthcoming increase in electric vehicles and how will you prepare for that?” This is probably an industry wide question with a complex answer. You don’t need to answer me directly but point me to articles on the subject.
Why is wind/solar is renewable when you can’t renew them; but natural gas it’s not always there where natural gas is renewable as it comes from the earth