I am submitting the following comments as they relate to Idaho Powerôs Integrated Resource Plan (IRP). That plan, filed in June 2015, does not in my opinion address the Oregon PUCôs Guideline 12 as stated in order 07-002, which addresses the role of distributed generation resources. The inclusion of those resources by Idaho Power into its IRP would bring into question the need for the construction of the 500 kV Boardman to Hemingway (B2H) transmission line.

OPUC Docket 07-002 Appendix A
Guideline 12: Distributed Generation:

> *Electric utilities should evaluate distributed generation technologies on par with other supply-side resources and should consider, and quantify where possible, the additional benefits of distributed generation.*

In its *Comment* section to the above guideline, the Oregon PUC took the position that:

> *...utilities should consider all resources that are likely to be commercially available during the planning period.*

A review of Idaho Powerôs Integrated Resource Plan reveals that the utility has made no provisions for distributed generation obtained from its consumer base. The term distributed generation does not appear anywhere in the text. While the plan mentions both utility-scale and distributed photo-voltaic as potential sources, the power portfolios were designed to include only utility-scale generation[1].

Idaho Power has also actively sought to limit distributed generation options available from their customer base through their efforts before the Idaho Public Utility Commission[2]. That brings into question the accuracy of the plan projections by creating an artificial shortfall in available power resources. Moreover, the inclusion of those resources would significantly impact the demand portion of the IRP as well.

The changing nature of the utility industry is widely understood in the financial sector[3]. The integration of micro-grid architecture, the plummeting costs of solar power, and the advent of offline storage will change the existing utility business model[4]. New customers, both residential and commercial, will want to sell the excess power they generate back to the utility. Without that opportunity, they may very well choose to disconnect from the grid. The Integrated Resource Plan does not address either the drop in demand from those aggregate decisions, or the potential for power purchases from the utilityôs customer base on the supply side.

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[1] Idaho Power Integrated Resource Plan, Section 5: Supply Side Generation and Storage Resources, Renewable Resources, Solar
[2] Prentice, ñIdaho Public Utilities Commission Sides With Idaho Power, Dramatically Reducing Terms of Solar Contracts.ò
[3] ñDevolving Power.ò
[4] Roberts, ñRooftop Solar Is Just the Beginning; Utilities Must Innovate or Go Extinct.ò

The Integrated Resource Plan also fails to factor in storage from the distributed generation provided by those residential and commercial customers. It envisions utility-scale storage options only[5]. Many organizations and entrepreneurs are competing to deliver batteries for scalable storage at that micro or small-grid level[6] [7] [8] [9] [10]. Those grids will also have intelligence built in[11]. Networked computing power will eventually allow for automated grid-to-grid communications. California is in the process of implementing rules for those communications[12]. Grid-to-grid exchanges will also have a significant impact on the transmission infrastructure, potentially eliminating the need for any additional long-distance transmission, and even obviating portions that currently exist.

Digital information has been almost completely absent from the electric grid and thatôs changing. Idaho Power should address these changes, and adequately reflect them in its planning effort. The utility must make provisions for an ever-increasing amount of distributed generation across its system, and factor in the effects of that capacity on their demand, supply, and transmission.

They have not done this in their Integrated Resource Plan.

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[5] Idaho Power Integrated Resource Plan, Section 5. Supply-Side Generation and Storage Resources, Renewable Resources, Solar
[6] Pasta et al., ñA High-Rate and Long Cycle Life Aqueous Electrolyte Battery for Grid-Scale Energy Storage.ò
[7] Huskinson et al., ñA Metal-Free Organic-Inorganic Aqueous Flow Battery.ò
[8] Roberts, ñBuilding a Better Battery for Renewable Energy Storage.ò
[9] ñViZn Energy Systems Earns Honors for Pioneering an Alkaline-Based Flow Battery in the Renewable Energy Market - Solar Thermal Magazine.ò
[10] ñThe Liquid Metal Battery. Solving the Problem of Renewable Energy Intermittancy.ò
[11] ñThe UCSD Microgrid - Showing the Future of Electricity ... Today.ò
[12] 13, ñCalifornia Commission Adopts Advanced Inverter Standards.ò

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