



## STAFF ANALYSIS

### Load Forecasts

In general, capacity deficiencies drive Avista's resource needs. Avista currently has sufficient capacity resources, due primarily to the relatively large amount of hydroelectric generation in its resource portfolio. However, capacity deficits begin in 2011 with the Company being short by 146 MW. The deficits continue to grow as peaking requirements increase with load growth, and the Company's resource base declines due to the expiration of market purchases and reductions in power from Mid-Columbia hydroelectric project contracts. Peak loads are expected to grow at 2.4 percent over the next 10 years and 2.1 percent over the entire 20-year forecast. For the most part, future capacity requirements will be met through the acquisition of new resources, which provide both capacity and energy. Table 1 presents the Company's net position forecast during the first 10 years of the study.

**Table 1: Net Position Forecast**

| <i>Net Position</i> | <b>2008</b> | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2015</b> | <b>2017</b> | <b>2020</b> | <b>2027</b> |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Energy (aMW)        | 121         | 79          | 33          | -83         | -170        | -228        | -272        | -341        | -513        |
| Capacity (MW)       | 148         | 94          | 5           | -146        | -251        | -357        | -300        | -530        | -835        |

As a general guideline, the annual energy position is used to determine when the Company needs to acquire additional base-load energy resources. Avista estimates that it will experience system-wide annual energy deficits beginning in 2011, with loads exceeding resource capabilities by 83 average megawatts (aMW) and rising to 272 aMW in 2017 and to 513 aMW in 2027. Avista attributes the energy resource deficits to an estimated 2.3 percent energy and capacity load growth through 2017 and the expiration of certain long-term supply contracts.

On a monthly basis, Avista expects to encounter energy deficits during some months in all years of the forecast. In 2008, for example, the Company position is deficit in January and October even though the annual position is surplus by 121 aMW. In other months, particularly during spring runoff, Avista is in a surplus position. As usual, the Company plans to balance its monthly positions through short-term market purchases or sales, exchanges or other arrangements. However, over the long-term, the Company's strategy is not to rely on long-term market purchases to serve future base load requirements.

Staff believes that the load forecast prepared and used by Avista for its 2007 IRP is reasonable. In addition to considering a base case forecast, "high" and "low" economic forecasts were also prepared to evaluate plausible changes in load due to population change within the Company's existing service area.

### **Demand Side Management and Supply Side Efficiency**

Avista plans to increase its acquisition of demand side management (DSM) electrical energy approximately 25 percent over the Company's 2005 IRP and by more than 85 percent from its 2003 IRP. As the costs of other generation alternatives rise, more DSM becomes cost effective. Additionally, the 2007 IRP recognizes other factors for the first time that increase the value of this resource; namely capacity value, risk reduction, transmission and distribution savings. These additional factors are inherent in the selection of supply-side resources. The application of new analytical techniques enables the Company to assign values for these benefits.

Avista's past DSM efforts have decreased its electrical energy requirements by nearly 100 aMW since programs began in the late 1970s. With additional funding recommended by the IRP and through a conservation and energy efficiency initiative called the "Heritage Project," the Company expects its future conservation to lower its projected load growth 87 aMW by 2017. The Heritage Project is intended to build on the Company's long-time commitment to energy conservation and efficiency, introducing new products and services to decrease its customers' peak demands as well as their energy use.

Staff appreciates Avista's long-held and continuing commitment to helping its customers reduce their bills through cost-effective demand side management. Staff further appreciates that Avista does not limit its review and recalculation of DSM resource potential to the biennial IRP process and, instead, is continually searching for ways to cost-effectively help customers use energy more efficiently. It is obvious, as stated in the IRP, that as future estimated supply costs and risks increase, the potential for DSM to cost-effectively supplant the need for those resources also increases. Staff believes Avista's approach to identifying and updating DSM potential is governed by sound research and well-reasoned principles.

However, Staff notes that throughout the IRP, Avista references only the total resource cost test (TRC) for evaluating cost-effective DSM potential. Historically, the TRC test is but one of the four cost-effectiveness tests that Avista has used to plan and evaluate DSM. The others are

the utility cost test (UCT), participant test, and ratepayer impact test (RIM). Avista has informed the Staff that it has not abandoned, and is not planning to abandon, the other cost-effectiveness tests and that these tests are, in fact, considered in development of Avista's more detailed business plan. Nevertheless, in recognition that some entities do rely almost exclusively upon the TRC test, we caution against a possible over-reliance upon the TRC. The TRC is a good test, but by itself it is not sufficient for evaluating maximum, long-term, cost-effective DSM for a utility's entire customer base and equitable treatment among customers. For example, because the TRC test does not include incentive payments made by a utility to its customers as a resource cost, over reliance on this test can result in perverse and inequitable DSM programs.

The IRP also identifies five planned and potential efficiency upgrades to four hydro-generation facilities. If all five of the upgrades are completed, the result will be a 38.4 MW (5.9%) generating capacity increase.

### Preferred Resource Strategy

Avista's Preferred Resource Strategy (PRS) provides direction and guidance for resource acquisitions over the 20-year IRP planning horizon. The 2007 PRS primarily includes gas-fired generation, wind generation, and other small renewables. It also includes a significant increase in conservation acquisition from today's levels. The specific resources contained within the PRS for the 2007 IRP, in cumulative nameplate capability, are shown in Table 2.

**Table 2: 2007 Preferred Resource Strategy Selections (Cumulative Nameplate MW)**

|                  | 2008     | 2009      | 2010      | 2011       | 2012       | 2013       | 2014       | 2015       | 2016       | 2017       |
|------------------|----------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|
| CCCT             | 0        | 0         | 0         | 280        | 280        | 280        | 350        | 350        | 350        | 350        |
| Coal             | 0        | 0         | 0         | 0          | 0          | 0          | 0          | 0          | 0          | 0          |
| Wind             | 0        | 0         | 0         | 0          | 0          | 0          | 100        | 100        | 200        | 300        |
| Other Renewables | 0        | 0         | 0         | 20         | 30         | 30         | 35         | 35         | 35         | 35         |
| Conservation     | 6        | 13        | 20        | 27         | 36         | 46         | 56         | 66         | 76         | 87         |
| <b>Total</b>     | <b>6</b> | <b>13</b> | <b>20</b> | <b>327</b> | <b>346</b> | <b>356</b> | <b>541</b> | <b>551</b> | <b>661</b> | <b>772</b> |

Selection of the PRS considered generation, transmission and emissions costs for the various alternatives. The PRS strikes a reasonable balance between keeping average costs and

variation in year-to-year costs low. The PRS requires between \$1.0 and \$1.5 billion in new investments over the next 10 years.

### **Differences from the 2005 IRP**

One of the most significant differences between the 2005 and 2007 IRPs is that the coal-fired generation in previous plans is replaced entirely with fixed price natural gas-fired resources. Recent legislation in Washington (Senate Bill 6001; Executive Order No. 07-02 (Washington Climate Change Challenge)), prevents utilities from entering into any long-term financial commitment for resources that exceed a greenhouse gas emissions performance standard of 1,100 lbs/MWh. The legislation provides for the standard to be lowered even further after 2012. The emission performance standard effectively precludes Avista from acquiring any new pulverized coal plant or a long-term contract with an existing one. IGCC (Integrated Gasification Combined Cycle) plants might be able to meet emission standards, but only with carbon sequestration. So far, however, carbon sequestration technology is yet to be proven and suitable sites have not been identified.

In addition to Washington legislation, the Western Regional Climate Action Initiative signed by the governors of five Western states seeks to decrease greenhouse gas (GHG) emissions, increase employment levels in green energy resources, reduce fuel imports and increase overall renewable generation levels. Oregon has similar renewable and emissions goals and laws in place or in development. Other states throughout the Western Interconnect are also developing or have already enacted GHG reductions and renewable portfolio standards. Finally, federal carbon limiting legislation is also becoming an increasing possibility. Although Idaho currently has no carbon emission standard or renewables portfolio standard, the mandates and requirements being implemented in surrounding states and possibly at the federal level limit coal from being a viable option for new generation to serve Idaho loads.

A second reason that Avista has removed coal from its Preferred Resource Strategy is because of higher costs associated with coal-fired generation. Avista, in a joint study with Idaho Power, investigated options for new coal-fired generation. One of the findings of the study was that coal plants are projected to cost much more than had previously been estimated. The higher cost estimates make coal-fired generation less competitive with other generation alternatives.

Another significant difference between the 2005 and 2007 IRPs is that the 2007 IRP includes fewer renewables. The expected contribution of renewable resources over the first 10 years of the plan has been reduced from 500 MW in the 2005 plan to below 350 MW (300 MW wind) in this plan. The Company states that the cost of wind resources has increased more than 100 percent over the past six years and more than 50 percent since the 2005 IRP. In addition, recent legislation in Washington, Oregon and throughout the West requiring the use of renewable resources has increased the demand for these resources and contributed to increasing their costs. Other renewable technologies, including geothermal and biomass, were slated in the 2005 plan to make up nearly 80 MW, but now total only 35 MW by 2017 in the 2007 plan.

Avista currently serves approximately one-half of customer requirements with renewable resources (hydro, wind and biomass), and these resources will meet 40 percent of the Company's load obligations in 2017. However, new legislation passed in November 2006 (Washington Energy Independence Act, Initiative 937; I-937) requires larger utilities in Washington to serve 15 percent of retail load with renewables by 2020. Unfortunately, only a small portion of Avista's current renewable resource portfolio qualifies under I-937. Consequently, to ensure compliance, it is likely that renewable resources will need to be acquired regardless of physical resource balance. Obtaining resources in an environment with significant competition has already resulted in a scramble to obtain the best resources, Avista states. The Company will consider turnkey or power purchase agreements, as well as investing in potential renewable energy sites for future development. Avista will also consider purchasing qualifying renewable energy credits to meet its statutory obligations.

### **Return to Gas-Fired Generation**

Avista moved away from natural gas-fired resources in its 2005 IRP because of the fuel's inherent price volatility. In addition, natural gas prices rose drastically between the 2003 and 2005 plans. Compared to other resource options, namely traditional coal-fired resources, natural gas became both costly and volatile. Because wind and other renewables were expected to be cost effective and reasonably plentiful, natural gas was not selected in the 2005 plan. Avista believes that conditions are different today, however.

As discussed previously, Avista has eliminated coal-fired generation completely, and there are fewer cost effective renewables in the 2007 IRP. Except for increasing its DSM efforts, one of

the only viable options left is to return to plans to acquire natural gas-fired generation. The 2007 Preferred Resource Strategy includes nearly 350 MW of natural gas-fired combined cycle plants in the first 10 years.

Natural gas-fired plant costs have not risen as significantly as other options. Rising capital costs make gas-fired generation more attractive because it is a less capital-intensive resource than coal, wind or other renewable options. Avista contends that gas represents a comparatively more attractive resource today than it was in 2005, even absent changing social policies.

Staff recognizes the increasingly limited resource choices available for new generation due to increasing costs of coal and renewables, not to mention new legislation limiting emissions. However, we also recognize that increasing reliance on gas-fired generation introduces additional volatility into the Company's portfolio. Because of the increased risk and volatility associated with gas, Staff believes it is extremely important for Avista to continue to explore options to minimize gas price risk and volatility.

### **Risk Analysis**

Avista made considerable analytical effort to evaluate the Preferred Resource Strategy against several alternative strategies under various scenarios of load, hydro conditions, emissions charges, wind generation and fuel prices. In addition, scenarios were investigated that included availability of nuclear plants beginning in 2015, and an influx in the use of electric cars. Overall, the Preferred Resource Strategy performed well, both in the Base Case and under numerous scenarios. The chosen combination of resources provides for a significant reduction of risk at a very modest impact to expected costs.

Staff believes that the Company's risk analysis was rigorous and thorough, and that a reasonable range of risks and scenarios were considered. Staff concurs that the Preferred Resource Strategy selected by the Company is superior to the other resource strategies considered in the IRP.

### **Lancaster**

Avista announced the sale of its energy marketing company, Avista Energy, in April 2007. It subsequently announced that Avista Energy's contract for the Lancaster Generation Facility output is available to the utility beginning in 2010. The Lancaster Generation Facility is a 245 MW gas-fired combined-cycle combustion turbine with an additional 30 MW of duct firing

capability. It began commercial service in 2001. The plant is located in Rathdrum, Idaho, in the center of Avista's service territory.

The Preferred Resource Strategy, as detailed earlier, includes 350 MW of natural gas-fired generation over its first 10 years. Because Lancaster is the same technology and available in approximately the same timeframe as the 280 MW gas-fired combined cycle resource identified in the PRS for acquisition in 2011, Avista recently completed preliminary analysis to determine whether Lancaster is a potentially cost effective resource to meet customer load requirements. It appears that the facility is significantly lower in cost than a green field plant. As a result, the

**Table 3: Net Position Forecast with Lancaster**

| <i>Net Position</i> | <i>2008</i> | <i>2009</i> | <i>2010</i> | <i>2011</i> | <i>2012</i> | <i>2015</i> | <i>2017</i> |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Energy (aMW)        | 121         | 79          | 288         | 181         | 79          | 37          | -8          |
| Capacity (MW)       | 148         | 94          | 280         | 129         | 24          | -82         | -25         |

Lancaster plant is assumed to replace a significant portion of the gas-fired CCCT plant included in the PRS. With Lancaster, resource deficits are pushed back to 2014, with loads exceeding resource capability by 49 MW. Table 3 presents the Company's net position with the inclusion of Lancaster, but without other resources in the Preferred Resource Strategy.

To date, Avista has not sought Commission approval of a contract for output from the Lancaster facility. Once Avista seeks to recover costs associated with purchases from the project, Staff expects to review whether purchase of the plant output by Avista is reasonable compared to other alternatives. Staff will also consider ratemaking treatment for purchases made in advance of need.

**Lowering Volatility with Long-Term Fixed Price Gas**

As discussed previously, coal-fired generation that comprised a significant portion of Avista's PRS mix in prior IRPs has been entirely replaced by gas-fired generation in the 2007 IRP. Coal-fired plants provide a hedge against volatile electricity and natural gas prices because so much of their costs are fixed through large capital investments. Variable operating and fuel costs at a coal plant are modest compared to gas-fired resources. A resource profile containing coal contributes to stable power supply expenses.

Natural gas plants, by comparison, are far less expensive to build, but have much higher and more volatile fuel costs over their lifetime. Utility portfolios with large concentrations of gas-fired generation can cause highly volatile electric prices. As more utilities turn to gas-fired generation in order to meet greenhouse gas regulations, the demand and cost of natural gas is bound to increase and become even more volatile.

In the 2007 IRP, Avista began exploring the possibility of locking in natural gas costs in order to make a gas-fired combined cycle combustion turbine (CCCT) cost structure behave financially like a coal-fired resource, therefore reducing price volatility. Avista suggests that this might be accomplished through a long-term fixed price contract, an investment in a pipeline-quality coal gasification plant, an investment in gas fields or through other means. Variable costs are much less volatile, the Company contends, because a significant portion of its largest variable component—gas fuel—is not tied to the natural gas market. In both high and low gas market conditions the price paid by customers is the same. Although fixing gas prices does not lower absolute cost over the long term, it can effectively limit price volatility.

Staff is intrigued by the idea of acquiring long-term fixed price gas as a means to reduce price volatility, and believes the concept should be further studied. More investigation needs to be done to determine whether gas suppliers are willing to lock-in long-term prices, and whether the other mechanisms identified by the Company are, in fact, viable and cost effective. As gas-fired generation is relied upon more heavily in the future, controlling price volatility will become extremely important.

### **General Comments**

In the past, integrated resource planning entailed assessing the utility's timing and need for new resources, identifying various options for new generation and conservation, evaluating the risks of various alternatives and building a resource portfolio reflecting the least cost, least risk combination of resources. Nearly all options were open to consideration, restricted only by their costs, risks and availability. Today, however, planning is constrained by an increasingly limited menu of options due to enactment of new laws imposing emission performance standards on fossil fueled generation resources acquired by electric utilities in Washington, Oregon, California and, perhaps soon, nationwide. In addition, many states are implementing renewable portfolio

standards that require specific amounts of renewable generation in the future, irrespective of whether they are least cost.

Ironically, Idaho presently has neither carbon emission standards nor renewable portfolio standards, yet the new legislation in other states has effectively limited the new generation choices for serving Idaho's loads. Multi-jurisdictional utilities, like Avista, must meet the requirements in all states in which they serve, and it is impractical to develop new generation projects devoted solely to serve Idaho loads, particularly when some new generation, like coal-fired plants, are likely to require the joint participation of multiple utilities and customers in multiple states.

In the beginning of this decade, gas-fired generation seemed to be the resource of choice. Gas-fired plants were relatively easy to permit, relatively cheap to build, relatively quick to bring online, and perceived as environmentally friendly. However, when gas prices skyrocketed in 2000-2001, utilities and customers became painfully aware of the costs and potential volatility of gas-fired generation. Moreover, competition for gas to generate electricity raised cost for other natural gas end uses.

For a brief period of time, coal-fired generation emerged as the new resource of choice due to its cost certainty, low fuel cost and its ability to moderate prices. In just the past year, however, plans for numerous coal-fired projects have been scrapped across the country. The planning questions associated with coal have quickly evolved from "How much will it cost to pay carbon taxes?" to "Can the plant be built at all, given existing or potential greenhouse gas legislation?" Many other utilities besides Avista, including Idaho Power and PacifiCorp, have also dropped coal-fired generation from their integrated resource plans.

With concerns being raised about emissions from pulverized coal plants, IGCC captured the attention of many due to its promises of lower emissions and its potential for future capture and sequestration of CO<sub>2</sub>. Recently, however, there seems to be increasing recognition that IGCC technology must be further developed and mature, and that it may not be a realistic alternative in the near term. In addition, some states have required that proposed IGCC plants be able to capture and sequester CO<sub>2</sub> from the day they start operating, not simply to promise to have that capability at some future date.

Restrictions on building traditional coal-fired generation, the uncertainties surrounding IGCC, and the fuel price risk associated with natural gas have changed the planning process. Outside factors, other than cost, risk and availability of resources, now dictate the choices

available to the utility. In this new planning environment, Staff believes it will be important for utilities to maximize acquisition of cost effective DSM, fully exploit renewable generation options, and continue to closely monitor advances in fossil-fuel generation technology. In addition, utilities should begin to seriously examine nuclear energy as a potential long-term option. Finally, Staff believes it is imperative that utilities devise and pursue methods to reduce the volatility associated with gas-fired generation, as it becomes a larger part of the portfolio.

### **2007 IRP Action Plan**

Avista's IRP contains the Company's 2007 Action Plan as well as its assessment regarding its progress toward implementing its 2005 IRP Action Plan. The 2007 Action Plan contains activities and studies to be developed and studied in the Company's 2009 IRP. It includes specific items in four areas: renewable energy and emissions, modeling enhancements, transmission modeling and research and conservation.

Significant 2007 Action Plan items are listed below.

#### ***Renewable Energy***

- Continue studying wind potential in the Company's service territory, possibly including the placement of anemometers at the most promising wind sites.
- Commission a study of Montana wind resources that are strategically located near existing Company transmission assets.
- Learn more about non-wind renewable resources to satisfy renewable portfolio standard requirements and decrease the Company's carbon footprint.

#### ***Demand Side Management***

- Update processes and protocols for integrating energy efficiency programs into the IRP to improve and streamline the process.
- Study and quantify transmission and distribution system efficiency concepts.
- Determine the potential impacts and costs of load management options currently being reviewed as part of the Heritage Project.
- Develop and quantify the long-term impacts of the newly signed contractual relationship with the Northwest Sustainable Energy for Economic Development organization.

#### ***Emissions***

- Continue to evaluate the implications of new rules and regulations affecting power plant operations, most notably greenhouse gases.
- Continue to evaluate the merits of various carbon quantification methods and emissions markets.

### ***Modeling and Forecasting Enhancements***

- Study the potential for fixing natural gas prices through financial instruments, coal gasification, investments in gas fields or other means.
- Continue studying the efficient frontier modeling approach to identify more and better uses for its information.
- Further enhance and refine the PRiSM LP model.
- Continue to study the impact of climate on the load forecast.
- Monitor the following conditions relevant to the load forecast: large commercial load additions, Shoshone county mining developments and the market penetration of electric cars.

### ***Transmission Planning***

- Work to maintain/retain existing transmission rights on the Company's transmission system, under applicable FERC policies, for transmission service to bundled retail native load.
- Continue involvement in BPA transmission practice processes and rate proceedings to minimize costs of integrating existing resources outside of the Company's service area.
- Continue participation in regional and sub-regional efforts to establish new regional transmission structures (Columbia Grid and other forums) to facilitate long-term expansion of the regional transmission system.
- Evaluate costs to integrate new resources across Avista's service territory and from regions outside of the Northwest.

The 2007 Action Plan, Staff believes, is a reasonable set of actions that will allow Avista to continue to meet its load obligations cost effectively, while also supporting the preferred resource strategy identified in the IRP and improving the planning process going forward.

## **STAFF RECOMMENDATIONS**

Avista's load-resource balance indicates both capacity and energy deficits beginning in 2011. The Company's Preferred Resource Strategy includes 350 MW of gas-fired generation in its first 10 years. Because output from the Lancaster gas-fired combined cycle plant is available in approximately the same time frame as needed by Avista, it intends to secure the output from this plant. By adding Lancaster to its portfolio, acquiring additional renewables and increasing its DSM efforts, Avista will extend to 2014 its need for other new resources.

While there will be no need for major new resource additions until 2015, however, Staff believes that Avista should be mindful of the volatility associated with increased reliance on natural gas. Staff recommends that the Company continue to investigate tactics to reduce volatility. In addition, Staff recommends that the cost and availability of renewables resources be

closely monitored. Despite its current higher costs and despite emission restrictions, Staff believes Avista should closely follow advances in clean coal technology. Nuclear energy should also be seriously investigated in future IRPs.

In summary, Staff believes that Avista has done a good job in assessing its load-resource conditions, incorporating demand-side management, evaluating new resource alternatives, analyzing risk and in selecting a reasonable portfolio of new resources.

Staff recommends that Avista's 2007 IRP be accepted and acknowledged.

Respectfully submitted this 17th day of January 2008.



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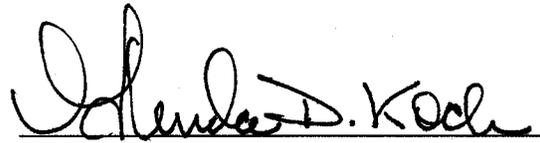
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## CERTIFICATE OF SERVICE

I HEREBY CERTIFY THAT I HAVE THIS 17<sup>TH</sup> DAY OF JANUARY 2008, SERVED THE FOREGOING **COMMENTS OF THE COMMISSION STAFF**, IN CASE NO. AVU-E-07-8, BY MAILING A COPY THEREOF, POSTAGE PREPAID, TO THE FOLLOWING:

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