

ROCKY MOUNTAIN POWER
AVOIDED COST CALCULATION

STANDARD RATES FOR AVOIDED COST PURCHASES FROM
QUALIFYING FACILITIES THAT QUALIFY FOR
SCHEDULE NO. 37

UTAH – June 2011

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The starting point for the avoided cost calculation is the load and resource balance developed for the Company's 2011 Integrated Resource Plan (IRP). It should be noted that many of the input assumptions for the IRP were fixed in December 2010, in order to enable filing of the IRP in March 2011. Some of the inputs have been updated for known changes for purposes of this avoided cost calculation.

Loads and Resources (L&R)

The Company updated the load forecast from the November 2010 forecast to the June 2011 forecast. Company owned wind resources and long-term sales and purchase contracts were updated to include information available as of early June 2011. These changes include the addition or revision of several long-term purchase contracts¹. The L&R is determined based on the resources that are available to the Company on an economic basis.

Table 1 presents the Company's load and resource balance. Table 1 shows an energy surplus from 2011 through 2014 and then an energy deficit of 174 average megawatts (aMW) in 2015. Summer peak capacity shows a deficit of 124 MW starting in 2011, growing to 1,371 MW in 2015.

In the Commission order in Docket No. 09-035-T14, the Company is directed "to label Table 1 with the applicable planning reserve margin assumption (e.g., 12 or 15 percent) in all subsequent filings of Schedule No. 37 rates." The purpose of Table 1 is to demonstrate when the Company is short on resources after meeting all obligations including operating reserves, which are seven percent for thermal resources and five percent for hydro and wind resources, plus regulating margin to follow the fluctuation of load. Therefore, the planning reserve margin assumed in Table 1 is equal to the operating reserve margin.

Avoided Cost Calculation

Based on the load and resource balance shown in **Table 1**, the avoided cost calculation is separated into two distinct periods: (1) the Short Run – a period of resource sufficiency

¹ Additions and revisions to the long term contracts portfolio include Clay Basin Gas Storage, Kennecott Refinery QF, Nevada Energy, and Threemile Canyon Wind QF.

(2011 through 2014); and (2) the Long Run – a period of resource deficiency (2015 and beyond).

1. Short Run Avoided Costs

During periods of resource sufficiency, the company's avoided energy costs are based on the displacement of purchased power and existing thermal resources as modeled by the company's GRID model. The model input data includes the monthly load and resource data, which are the basis for the annual summary of loads and resources shown in **Table 1**.

To calculate short-run avoided costs, two production cost studies are prepared. The only difference between the two studies is an assumed 10 aMW increase, at zero running cost. The 10 aMW resource serves as a proxy for qualifying facility generation. The avoided energy cost could be viewed as the highest variable cost incurred to serve total system load from existing and non-deferrable resources. The outputs of the production cost model run are provided as **Table 2**.

Capacity costs in this period are based on capacity purchases for the number of months that the company is capacity deficit. For example, if the company is capacity deficit for five months in a given year, the purchases would be for five twelfths of the year and the annual value as shown in **Table 3** would be five twelfths of the capacity cost of a simple cycle combustion turbine (SCCT).

2. Long Run Avoided Costs

During the resource deficiency period (2015 and beyond) in which new resources are required to provide both summer and winter capacity and energy to meet the Company's resource requirements, avoided costs are the fixed and variable costs of a proxy resource that could be avoided or deferred. The current proxy resource is a combined cycle combustion turbine (CCCT)².

Since CCCTs are built as base load units that provide both capacity and energy, it is appropriate to split the fixed costs of this unit into capacity and energy components. The fixed cost of a single cycle combustion turbine (SCCT), which is usually acquired as a capacity resource, defines the portion of the fixed cost of the blended resource that is assigned to capacity. Consistent with the Commission Order in Docket 03-035-14, 50% of the fixed costs associated with the construction of the CCCT resource in excess of the fixed costs of a SCCT is assigned to energy and is added to the variable production (fuel) cost of the CCCT resource to determine the total avoided energy costs. **Table 3** shows the capitalized energy costs.

² 597 MW CCCT (Dry "F" 2x1) - East Side Options (4500') as listed in Table 6.1 and 6.3 of the IRP. 625 MW CCCT listed in Table 8.16 of the IRP is the Lake Side II CCCT that is no longer deferrable. Fuel costs are from the Company's March 2011 Official Forward Price Curve.

The fuel cost of the CCCT defines the avoided variable energy costs. The gas price forecast used as the basis for the CCCT fuel cost is discussed later in this document. **Table 4** shows the CCCT fuel cost, the addition of capitalized energy costs at an assumed 50.3% capacity factor and the total avoided energy costs. The capacity factor was 50.5% in the prior filing.

Because energy generated by a qualifying facility may vary, the total avoided costs at 75%, 85% and 95% capacity factor are prepared to illustrate the impact of differing generation levels. This calculation is shown in **Table 5**.

Avoided energy costs can be differentiated between on-peak and off-peak periods. To make this calculation, the Company assumed that all capacity costs are incurred to meet on-peak load requirements. On an annual basis, approximately 57% of all hours are on-peak and 43% are off-peak. **Table 6** shows the calculation of on-peak and off-peak avoided energy prices.

For informational purposes, **Table 7** shows a comparison between the avoided costs currently in effect in Utah and the proposed avoided costs in this filing. 20 year nominal levelized prices are calculated using a 7.15% discount rate. The discount rate was updated from 7.17% in the prior filing.

Table 8 shows the calculation of the total fixed costs and fuel costs of the CCCT and SCCT that are used in **Table 3** and **Table 4**. In this filing, the Company's next deferrable resource is a CCCT located on the east side of the Company's system. This result is consistent with the Company's addition of an east side CCCT in 2016 as shown in Table 8.16 of the IRP.

Price Forecast for Electricity and Natural Gas

The electricity and natural gas prices used in this filing are from the Company's Official Forward Price Curve dated March 31, 2011. Both the electricity and natural gas prices are part of the inputs to the Company's GRID model in the calculation of the proposed avoided costs in this filing. In addition, **Table 9** shows the natural gas price used to calculate the fuel costs of the CCCT that is the proxy resource for the Long Run avoided costs, and **Table 10** shows the electricity prices at Mid Columbia and Palo Verde that are used in the Company's avoided costs calculation on a heavy-load hour and light-load hour basis.

For the period from April 2011 through April 2017, the official forward prices are based on the information from the market forward transactions. For the period from May 2017 through April 2018, the official forward prices are the average of market information and the long-term price forecast. For period beginning in May 2018, the official forward prices are based on long-term price forecast.