Electric Avoided Cost Methodology

	Council	Avista	PacificCorp	PSE	Consistency with Council Method
Primary Inputs					
Long-term forward price forecast(s) for energy and capacity	Yes, based on Aurora forecast of 8760 market prices aggregated into 4 time segments per month (48 annual segments) for cost benefits analysis, wide ranges and volatility added for portfolio analysis to capture risk.	Yes. An 8760 hour, 20 year forecast of costs are derived from Aurora.	Yes. In lieu of Aurora PacifiCorp uses a combination of our System Optimizer and Midas models which also rely on 8760 market price forecasts for energy to meet projected loads which includes both market purchases and generated power.	Yes. Two separate forecasts for energy and capacity are used. ENERGY: Uses hourly (8760) AURORA forecast of market energy prices from the IRP, aggregated up to the annual level, then re-distributed by month and coincident peak hour, based on end use load shapes. IRP looks at various scenarios and sensitivities to capture risk. Program analysis uses the forecast from the base resource plan. CAPACITY: Avoided peak capacity costs ($/KW) from the IRP portfolio analysis, adjusted for end use coincident peak load factor.	All utilities rely on hourly market price forecasts, consistent with the Council. Values vary according to the resource needs and options available for each utility.
Deferred/avoided T&D system costs	Yes for distribution system. Based on kW avoided at coincident peak and $ value of deffered kW expansion.	These are included in the avoided cost used for DSM purposes based upon an assumption of $105 per kW capacity cost.	Yes. PacifiCorp applies a T&D deferral credit for energy efficiency in the IRP, currently set at $54/kW-year. The credit reduces measure resource costs in the supply curves prior to IRP modeling.	Yes, based on projected budget for capacity-related expansion of PSE-owned transmission & distribution. Applied to avoided peak capacity.	All utilities, like the Council, include a T&D deferral credit. Values may vary across utilities based on their system characteristics.
T&D line loss adjustment	Yes, 3.9% WECC transmission losses and 5% distribution losses, average about 9% total. Transmission losses vary by load levels so losses differ by load profile of measures.	Included in our avoided cost for DSM purposes at 7.5%.	Yes - System wide sector specific (residential, commercial and industrial) line losses are added to the site level DSM measure savings. Incorporated when dsm costs are levelized in development of supply curves prior to IRP modeling.	Yes. Determined from cost of service energy allocation calculations. IRP analysis uses overall system average losses and program analysis separates system average into residential and C/I class averages.	All utilities include a line loss adjustment, as does the Council. Utilities are utilizing average system losses; Council assumes marginal losses.
Generation reserve margin adjustment	Not directly. Included in Aurora for cost benefit assessment. Based on resources needed to meet load reliably and avoid high price excursions in portfolio analysis.	This adjustment is included with the market price forecast and the capacity credit calculated in the PRiSM model.	Yes. We include a capacity contribution for energy efficiency in our determination of capacity requirements.	Yes, for program analysis the avoided capacity cost forecast is adjusted upward to include savings from reduced reserve margin requirement. Not directly applied to DSM in IRP analysis, embedded in total portfolio resource costs.	All utilities and the Council incorporate reserve margins as part of the avoided capacity costs.
Uncertainty/risk adjustment	Yes. Portfolio analysis evaluates risk level explicitly as a characteristic of a resource strategy, value of efficiency in reducing risk is calculated as a premium for efficiency over market price.	Risk is included as an adjustment to avoided cast by calculating the incremental cost of the Preferred Resource Strategy as compared to the Least cost resource strategy (This value could be zero depending upon the selection of the preferred portfolio). This is a proxy for the value to a customer for the reduced exposure to future energy cost volatility as a result of adopting an efficiency measure.	PacifiCorp's IRP modeling of energy efficiency includes a risk reduction credit. The analytical approach was outlined in Appendix 4 of UE-100170 filed to support establishing the first biennial targets, and targets the value of energy efficiency for reducing high-cost outcomes in the context of stochastic Monte Carlo production cost modeling. While the analytics are not used specifically to determine DSM avoided costs, it does affect the selection of DSM resources in a manner consistent with the Council methodology. This approach was utilized again in the 2011 IRP for energy efficiency resources selected in all states.	Yes. IRP evaluates risk by assessing resource portfolios under different scenarios for fuel prices, growth, and carbon costs,. as well as sensitivity analyses on certain key variables. Program analysis uses a Planning Adjustment factor which represents the cost premium between building new supply resources and market energy prices (derived from IRP portfolio analysis).	All utilities and the Council incorporate risk, although the values may vary.

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10% Power Act credit	Yes. Applied to energy & deferred capacity components of value only.	Not in our AC. We apply a 10% credit to TRC benefits within the DSM cost-effectiveness calculation.	Yes. The analytical approach was outlined in Appendix 4 of UE-100170 filed to support establishing the first biennial targets. The formula for calculating the $/MWh credit is: (Bundle price - ((First year MWh savings x market value x 10%) + (First year MWh savings x T&D deferral x 10%))/First year MWh savings. The levelized forward electricity price for the Mid-Columbia market is used as the proxy market value. While the analytics are not used specifically to determine avoided cost values, it does affect the selection of DSM resources in a manner consistent with the Council methodology. This approach was utilized again in the 2011 IRP for Washington resources only.	Yes. Applied to Energy and Capacity values for calculation of TRC.	All utilities apply the 10% credit, but not as a direct adjustment to avoided cost in all cases. Avista applies it as benefit in its TRC calculation , rather than to the avoided cost. PacifiCorp applies the 10% adder as an additional benefit during the TRC calculation. PSE is consistent with the Council.
Shape of load (time and seasonality differentiation)	Yes. Four weekly time segments for each month and measure, aggregated from 8760 in Aurora and short-term demand forecast.	DSM measures are assigned to one of 34 end-use loadshapes (8760 hour) and valued based upon our 8760 hour avoided cost stream.	Yes. Avoided cost values (expressed in $/MWH for given year) are established by decrementing the load using using 8,760 hour load shapes.	Yes. End use load shapes from 6th Power Plan and RTF are used to shape loads and costs. IRP analysis shapes loads and costs over 8760 hours. Program analysis aggregates hourly shapes to month and coincident peak hour; using a subset of IRP load shapes (some shapes not used where other end uses and shapes were similar).	All utilities and the Council apply load shapes to their savings and costs. Methodology is generally consistent, but assumptions may vary.
Present Value Calculation Inputs					
Discount rate (real or nominal, pre-tax or post-tax, etc.)	Yes. Real after tax cost of capital. Rates vary for different types of utilities and consumers and debt versus equity.	We apply our weighted average cost of capital (currently 6.80%) to the nominal stream of future costs and benefits. The same discount rate is applied to all standard practice tests.	Yes. IRP uses a weighted average cost of capital (currently 7.4%).	Yes. Uses nominal PSE weighted average long run cost of capital.	All utilities use their weighted average cost of capital, while the Council uses a hybrid of utility cost of capital and customer long-term discount rate.
Time frame (program/measure life, other term)	Twenty-year program analysis. Measure lives <20 years are re-purchased, longer are prorated and truncated.	Measure lives are derived from a variety of sources to include internal and external estimates.	Tweny year planning horizion. Measure lives <20 years are repurchased, longer are prorated and truncated.	Individual measure lives are assigned up to a 30-year maximum. IRP uses a fixed 20-year planning period; measures with shorter lives are repurchased and measures with longer lives are truncated and costs prorated. Program analysis is based on one life cycle of a measure up to 30 years.	All utilities handle time frame and measure lives similarly to the Council in their IRP's. For non-IRP program analysis, utilities generally use one measure lifecycle as the time frame.
Calculation algorithms (generalized)	**Avoided Cost for a Measure =**				
Energy (if calculated separately)			The approach to establishing the DSM avoided cost values is described in the IRP and outlined briefly here. Values are established for resource types that align with measue types such as residential lighting, residential cooling, etc. where a 8,760 hourly load shape is available. Forecasted loads within the IRP preferred portfolio are reduced or decremented by an aggregate amount across each each hour of the representative load shape. The change in the IRP preferred portfolio's present value of revenue requirements for each resource type is displayed in $/mWh and represent the avoided cost for that resource type.	Yes for program analysis. AC Energy = Base Case market price forecast + line loss adjustment + risk factor (called the "Planning Adjustment") + 10% Power Act credit	See below

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Capacity (if calculated separately)			Included in decrement analysis	Yes for program analysis. AC City = Base Case avoided capacity cost + deferred T&D expansion costs + reserve margin adjustment + 10% Power Act credit	See below
Energy & Capacity combined (if calculated together)	Avoided Cost for a Measaure = Mean point forecast of market price of energy by measure (based on shape of savings) PLUS Uncertainty/Risk Adjustment from portfolio analysis	Measure cost are compared against the benefits derived from risk-adjusted commodity costs, generation and T&D capacity cost, reduced line loss and reduced monetized emission costs.	Decrement analysis is combined value for both energy and capacity.	For IRP analysis, portfolios are evaluated on the basis of total costs for energy and capacity, across various planning scenarios to incorporate risk. Conservation resource costs include deferred T&D costs, reduced T&D line losses, and the 10% Power Act credit. For non-IRP program analyses, separate avoided cost streams are calculated for energy and capacity, then combined.	All parties combine energy & capacity together. PSE: In program analyses outside the IRP, PSE calculates separate avoided cost streams for energy and capacity and brings them together in its TRC calculation. All other parties incorporate capacity into their forecasts of energy prices.

Please Indicate whether the items in each row are part of your methodology by responding YES or NO with a brief explanation, if necessary.