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It is well-understood that much of the value of energy efficiency stems from its below-market cost. In the Sixth Power Plan, for example, the Council estimates the availability of over 2200 MWa of conservation in the Region at or below $30/MWh.

Less is understood about the Council’s cost-effectiveness risk premium over wholesale market price. The following are generic sources of value that the risk premium provides.

* Capacity deferral
  + If a utility anticipates capacity requirements for energy or for risk mitigation (reserves), conservation capacity has value
  + **Shape of conservation**: the greater the on-peak conservation contribution, the greater the deferral on a per-MWh or average MW energy basis. Because energy efficiency tends to have greatest effect when requirements are large, it tends to have more reduction on-peak than off-peak. (See [Conservation Energy Distributions.xls](file:///\\nas1\power\MS\Plan%206\Studies\L813\Adder%20for%20Discretionary%20Conservation\Conservation%20Energy%20Distributions.xls) )
  + Conservation recovers its value at all price levels. In futures with anticipated low price, due perhaps to RPS legislation or technology innovation, **dispatchable resources would dispatch very infrequently** and have less opportunity to cover their fixed cost. (More generally, see the next bullet.)
  + The **high-risk futures** for the region are those with high load requirements/high prices for electricity and low requirements/low prices. Neither of these makes high-heat rate dispatchable resources (SCCTs) attractive as a risk-mitigation measure, regardless of their “expected” capacity factor.
* Fuel price and carbon risk protection
  + The fixed cost of conservation protects utilities short of resources from electricity price risk[[1]](#footnote-1)
  + An **uncertain future carbon penalty**, which would only increase these prices, contributes significantly to this value
  + All utilities subject to ***fuel* price volatility** benefit
* Purchases at below-average prices
  + If the supply curve for conservation is convex, rather than linear, there is a “**constant dollar averaging**” effect.[[2]](#footnote-2)
  + A premium minimizes our **foregoing acquisition of inexpensive conservation** during periods of low wholesale market prices for electricity
  + This effect is especially important to **lost opportunity conservation**
* Displacement of RPS resources
  + Qualifying utilities are obligated to purchase amounts of renewable resources equal to a percentage of their energy loads under renewable portfolio standard statutes
  + **By reducing load**, conservation reduces the RPS obligation and, in turn, the cost of RPS energy purchases or construction. The cost savings will equal the percentage of renewable cost ($/MWh) that their RPS energy load target represents. For example, if avoided renewable cost is $100/MWh and RPS energy targets are 20 percent, the savings is $20/MWh.
* Short-term cost reduction
  + Even in a market, such as that in the PNW, that is surplus most of the time, reducing prices can reduce costs
    - The net cost is determined by the **timing of sales and purchases relative to market prices**. If the PNW sells off-peak in the spring – at low prices – and buys on-peak in the winter – at high prices, it is more likely to see these effects
    - Off-peak sale prices are **constrained below by zero**, while on-peak purchase prices are unconstrained
* Opportunity to develop and resell conservation energy
  + Many utilities maintain that their avoided cost is much lower than the wholesale market for electricity, and consequently, there is little incentive for them to develop their conservation up to wholesale market prices
  + Given that other utilities seek energy at market (or at a premium over market), a **resell opportunity may exist**. Sales to other utilities reduce total cost.
  + There is evidence that **even full-requirements customers of BPA can enjoy benefits** from developing conservation in their service territory for use by other utilities[[3]](#footnote-3)

1. Electricity price risk mitigation can shrinks, disappear, or actually increase if the amount of conservation (or other non-dispatchable resource) exceeds a utility’s minimum load requirement. [↑](#footnote-ref-1)
2. If the supply curve were to have an exponential shape (p=eq), the effect would be exactly constant dollar averaging. [↑](#footnote-ref-2)
3. Tom Eckman, ***Some Thoughts on Treating Energy Efficiency as a Resource***, [ElectricityPolicy.com](http://www.electricitypolicy.com/archives/3118-some-thoughts-on-treating-energy-efficiency-as-a-resource), refers to the 1989 arrangement that BPA struck to transfer credit for Snohomish PUD’s conservation acquisitions to Puget Sound Energy. [↑](#footnote-ref-3)