Potential Non-energy Benefit Inputs to Energy Trust of Oregon Cost-effectiveness Tests

UM 2114 Workshop on Energy Trust and Energy Efficiency

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Energy Trust of Oregon has invested in understanding quantifiable benefits of energy efficiency beyond energy savings. This has been done both directly and through co-funding the NW Power and Conservation Council's Regional Technical Forum. Quantifiable non-energy benefits can be an input into the Total Resource Cost Test, one of two cost-effectiveness tests used by Energy Trust.

We actively seek further exploration of benefits which can be quantified. The following table lists potential non-energy benefit inputs and their validity, magnitude/strategic importance, applicability and status.

Potential Non-energy Benefit	Validity	Validity Notes	Magnitude, Strategic Importance	Magnitude, Strategic Importance Notes	Applicability	Applicability Notes	Final Score	Status
Health improvements and related cost savings from indoor air quality or improved temperature control at a site	High	Multiple published studies proving and monetizing benefit. Studies include robust sample size typically relying on pre/post methodology.	High	High strategic importance based on possibility of external healthcare funding and expansion of service	Medium	We don't have a program design that matches the available research	**High**	Work is underway to monetize for Oregon; program design and incorporation still needed
Impact of efficiency programs on late utility payments and utility arrearages (debt load)	High	Multiple published studies proving and monetizing benefit. Studies have evaluated claims and proved them to be true. Range varies but is generally accepted by commissions and utilities outside of Oregon.	Medium	Value is dependent on customer bill savings. For overall benefit to be higher requires higher investment in energy savings measures. Depending on measure savings the value could be modest or large.	High	Readily applied to income qualified offerings. Literature is specifically in regards to low-income. It could be applied to any customer in debt but we currently do not have a system in place to track or designate customers who are in	**High**	Value and methodology are in development

						arrearages with their utility.		
Accelerated home upgrades for electric vehicle (EV) readiness	Medium	Questions about what future EV readiness looks like.	High	Over the life of the homes maybe 75 out of 100 homes will eventually get an EV. Unsure whether value is big or small until analysis is complete.	High	Expected to be applicable for new single-family homes provided that they have correct characteristics to enable electric vehicle adoption.	**High**	Methodology are in development, need to work with utilities on valuation
Fire prevention from reducing use of wood-fueled fireplaces and baseboard heaters	High	Study performed by Bonneville Power Administration and recognized by the Regional Technical Forum.	Low	The benefit of the savings was very low in relation to total incremental cost of the ductless heat pump that was analyzed. This applies to a very limited subset of applications.	High	Applies easily to ductless heat pumps replacing baseboard heaters or fireplaces	**High**	Analysis is complete, incorporation may occur in the future when measure is up for review
Reduction in customer energy burden (greater than 6% of income spent on utility bills)	Low	Limited research is available. An Energy Trust contractor (TRC) has examined it. Research exists on low-income programs under customers having more control over their bills.	High	High strategic importance based on Governor's executive order and Energy Trust organizational goals. Magnitude is likely small to moderate.	High	Would likely only apply to low-income customers where we can be relatively sure energy burden exists	**High**	Preliminary analysis complete; analyzing validity issues
Reduced subsidy payments (low-income customers)	High	Limited research is available but the utility benefit of reducing subsidies for low-income is easily quantifiable.	Medium	Likely small to moderate value but strategically may be important	Medium	Would likely only apply to customers on bill assistance or LIHEAP. Brings into question program design and tracking at a participant level	**Medium**	Requires utility data and programs to align with energy assistance programs

Water savings for untreated water (irrigation)	High	Can be readily verified and monetization is simple. May require some evaluation or measurement and verification	Medium	Limited project application but could potentially be large on a per project basis.	High	Could occur in custom pathways already	**High**	Currently being considered in custom path
Customer time-of-use (TOU) rate arbitrage with EV chargers *[ability to save money by using electricity at times when rates are lower and reducing consumption when rates are higher]*	High	Research is limited; however, the non-energy benefit is monetizable and has been looked at by Energy Trust contractor TRC for Energy Trust's partner utilities	Medium	Could be large but needs additional research to verify that arbitrage taking place in the manner assumed by researchers. Not sure how this will factor into the future, it could potentially become much more important.	Medium	Would only potentially apply to grid harmonization new homes offer. Questions about attribution may occur in terms of what enabled the TOU arbitrage. Question about baseline condition and whether it includes this or not.	**Medium**	Preliminary analysis complete; awaiting incorporation into program design
Customer time-of-use (TOU) rate arbitrage with battery storage *[ability to save money by using electricity at times when rates are lower and reducing consumption when rates are higher]*	High	Research is limited; however, the non-energy benefit is monetizable and has been looked at by Energy Trust contractor TRC for Energy Trust's partner utilities	Medium	Could be large but needs additional research to verify that arbitrage taking place in the manner assumed by researchers.	Medium	Would only potentially apply to grid harmonization new homes offer. Questions about attribution may occur in terms of what enabled the TOU arbitrage. Somewhat adjacent to Energy Trust's mission.	**Medium**	Preliminary analysis complete; awaiting incorporation into program design
Accelerated home upgrades for solar electric readiness	High	Theory seems solid but $ value is not yet widely tested.	Low	Over the life of the homes maybe 20 out of 100 homes will eventually get a solar electric system	High	Expected to be applicable for most new single-family homes provided that they have correct characteristics for system installations.	**Medium**	Preliminary analysis complete; waiting incorporation into program design

Participant resiliency	Medium	Research and some ratepayers have demonstrated value in resiliency; however, it needs to be well defined in order to be monetized.	Medium	Magnitude is unknown but could be large and has strategic importance for Energy Trust and the region.	Medium	Some questions about applicability, overlap with capacity values and avoided cost.	**Medium**	Not currently prioritized for research by Energy Trust
Utility system resiliency	Medium	Research and utilities have demonstrated value in resiliency; however, it needs to be well defined in order to be monetized.	Medium	Magnitude is unknown but could be large and has strategic importance for Energy Trust and the region.	Medium	Some questions about applicability, overlap with capacity values and avoided cost.	**Medium**	Not currently prioritized for research by Energy Trust
Reduced missed work days/school days	High	Numerous studies cite this benefit and quantify it. Usually done on a pre/post basis from weatherization measures. Benefit is easily monetized.	Medium	Could be potentially large on a per household basis, particularly if benefit persists over the lifetime of a measure.	Low	We don't have a program design that matches the available research of this benefit.	**Medium**	Not currently prioritized for research by Energy Trust
Comfort general	Medium	While the existence of improved comfort is generally valid, the monetization of comfort is not well defined.	Medium	We would have to account for this as a benefit but also a potential cost. If a measure decreases comfort that would need to be accounted for.	High	Could apply to most heating, ventilation and air conditioning (HVAC) measures.	**Medium**	We already incorporate this to some extent for cooling measures
Avoided or accelerated future home upgrades for gas lines	Low	Highly disputed	Medium	For measures that depend on this it will make or break the cost-effectiveness of those measures.	High	For tankless water heaters this could potentially allow the measure to be cost-effective.	**Medium**	Not currently prioritized for research by Energy Trust
Increased property values or rental values	Medium	Benefit has research but would need local values and to tease out other price effects not related to efficiency.	Low	The cost is passed on to either renter or homebuyer and from a societal perspective the benefit is essentially zero.	Low	Difficult to tie back to a specific measure. Could apply to a suite of measures.	**Low**	Not currently prioritized for research by Energy Trust

Outdoor air quality impacts from wood burning stoves	Low	This is a societal benefit that doesn't currently fit within the Total Resource Cost (TRC) test because it does not directly impact the utility or the participant.	Medium	Applies to areas with wood stoves and industrial facilities where poor air quality can linger outside times of use.	Low	Values vary by orders of magnitude across counties which makes it very difficult to implement.	**Low**	Not currently prioritized for research by Energy Trust
Floorspace savings from efficient equipment that takes less floorspace than standard equipment	Low	OPUC previously expressed reservations on this one in relation to water heaters in homes.	Low	Potential to convert significant spaces that are currently occupied by building operating systems into spaces for other uses. Overall impact on savings may be low but could have importance for key market sectors like schools or multifamily.	Low	Real world examples of "significant space" may be hard to come by.	**Low**	Not currently prioritized for research by Energy Trust
Noise reduction from quieter equipment or weatherization	Low	Research on benefit has cited this benefit but not monetized it. It's unclear how it occurs relative to baseline equipment. Seems like more of a marketing claim.	Low	Likely small and difficult to monetize and quantify.	Low	Difficult to apply to sq. footage of weatherization measures. For equipment we would have to consider whether or not baseline equipment or other models perform with respect to noise	**Low**	Not currently prioritized for research by Energy Trust