

## Report Back:

# *Single family homes: “Product Specs” in 3 years*

June 1, 2011

# ARPA-E strawman for single family homes, 3 year “product specs”



<u>Category</u>	<u>Suggestions</u>
<b>System rating</b>	<ol style="list-style-type: none"> <li>1: Pick a single system size so you can compare on the same basis.</li> <li>2: Should be the only firm target and range of acceptable values. Evaluate technology parameters in a model.</li> <li>3: 1-15kWe – demonstrate within this range using specific load profiles that ARPA-E provides for high target areas</li> </ol>
<b>Electrical efficiency (@ ≥50% kW rating)</b>	<ol style="list-style-type: none"> <li>1: This can be measured through prototype within the lab</li> <li>2: ~40%</li> <li>3: Shouldn't specify because cost and emissions are already specified</li> </ol>
<b>Cost</b>	<ol style="list-style-type: none"> <li>1: Make bottom-up and top-down estimate. This could be a bill of materials and a cost curve.</li> <li>2: \$5000/kWe with a grid connection</li> <li>3: Demonstrate 70-80% of LCOE at \$0.10 at specific load profiles and ARPA-E should specify how these calculations should be done. Need to have a plan to get all the way there. (MOST IMPORTANT)</li> </ol>
<b>Durability</b>	<ol style="list-style-type: none"> <li>1: 2,000 hrs of prototype testing (not necessarily continuous) and project 60,000 hrs with some confidence interval. Do this with accelerated testing and component testing. Must satisfy the OEMs.</li> <li>2: 8,000 hrs before MTBF, case analysis for 60,000 hr lifetime</li> <li>3: Demonstrate 1000 hrs at max load and peak temperature, and efficiency, electrical output and size should be specified.</li> </ol>

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<u>Category</u>	<u>Rationale</u>
<b>Fuel type</b>	3: Natural gas – cheap, existing infrastructure
<b>Noise</b>	3: Less than 60 dB at 10m assuming the unit would be inside
<b>Emissions</b>	1. Measure and then have a plan to get there. 2. Emissions should be a function of technology readiness. Required when fully mature. 3: Meet US EPA standards for gensets during 1000 hour test and a plan to get you to the CARB standards.