

# EMPRESS Harmonization Options for HERS and HES

Draft - v. 4/17/2017

Harmonization Options	Description	Notes
<b>Alignment</b>		
<b>1. Align Inputs and Assumptions</b>	Review key differences and similarities between HERS and HES, and recommend common inputs and assumptions. E.g., thermostat set-points, weather data, number of occupants, etc.	Determine whether NREL has already done this. If not, consider someone like Rob Salcido with an intimate knowledge of HERS to perform this task.
<b>2. Align Outputs</b>	Conduct HERS & HES comparative analysis to understand issues that impact outputs, with a goal of aligning site based energy consumption estimates from which annual MMBtu and energy costs are calculated..	NREL analysis of HERS and HES comparisons will provide insights and direction for next steps. Collaborate with Philip Fairey's test suite that examined different softwares and found windows to be a key difference between tools.
<b>Common Reporting</b>		
<b>3. Common Metrics</b>	Decide on common reporting metrics to include in both HERS and HES reports, that can populate in common fields in MLS systems.	For example: <ul style="list-style-type: none"> <li>• MMBtu/year</li> <li>• Total energy cost/year</li> </ul>
<b>4. Common Report</b>	HERS and HES generate a common report in a standardized format that can be generated from either software.	"Yellow EnergyGuide" or "Nutrition" label, as examples. State labels such as Vermont's or Missouri's could also serve as examples.
<b>5. DOE 1-10 Score on HERS Rating Reports</b>	Report out DOE's 1-10 score on HERS rating reports, in addition to the HERS score.	Some HERS software providers at RESNET Conference suggested this approach. DOE could lend their logo wherever 1-10 is used.
<b>6. Existing Home Certification Based on Asset Score</b>	Work with EPA ENERGY STAR to develop a binary certification for high performance existing homes, which relies in whole or part on an asset score that could be either HERS or HES.	Highly uncertain given threats to ENERGY STAR funding. If ENERGY STAR remains an option in 2018, state alignment on approach would help to move it forward. If ENERGY STAR is not an option, then individual states could develop existing home certifications using a similar approach. MO certificate is an example (Silver or Gold based on either HES or HERS)
<b>Technical Harmonization</b>		
<b>7. Expanded Test Suite to Validate Software</b>	Like BESTEST and BESTESTEX, HERS and HES software can be compared to a suite of representative/actual existing homes to determine "accuracy".	Coordinate with RESNET and NREL to implement.
<b>8. Common Metrics from a Single Calculator</b>	HERS and HES could both use APIs to access DOE2 to produce the same site based energy consumption estimates from which annual MMBtu and energy costs could be calculated.	While each modeling tool would continue to produce ratings and other reports as they currently do, they would access a common calculation tool to produce common metrics.

<p>9. <b>EnergyPlus as a Common Modeling Engine</b></p>	<p>HERS and HES could both use APIs to access EnergyPlus as their calculation engine to produce the same site based energy consumption estimates from which annual MMBtu and energy costs could be calculated.</p>	<p>RESNET is unlikely to move in this direction due to perceived costs, unwillingness to become a software support provider, uncertainty about the future of DOE support/budgets, and loss of control/autonomy.</p>
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