



Cornell University
Cornell Energy Institute

Jefferson W. Tester
Croll Professor of Sustainable Energy Systems
Chemical and Biomolecular Engineering
Director, Cornell Energy Institute
Fellow, Atkinson Center for a Sustainable Future
2160 Snee Hall
Cornell University
Ithaca, NY 14853
607-254-7211
jwt54@cornell.edu

January 25, 2016

RE: STARS Innovation Credit Letter of Support

Our group appreciates the opportunity to submit the Cornell-Verizon Wireless Geothermal Heat Pumps for Cooling Cellular Tower Shelters Project as an innovative credit for this year's Sustainability, Tracking, Assessment and Rating System (STARS) submittal.

This project is a collaborative project between the Cornell Energy Institute and Verizon Wireless. It is a multi-year study that investigates the technical performance and economic attractiveness of using geothermal heat pumps to provide cooling for the instrumentation housed in cellular tower shelters. A full-scale and fully-monitored hybrid geothermal heat pump system (GSHP) was built at a Verizon Wireless cellular tower site located at the east end of the Cornell Plantations (Varna, NY). The GSHP has operated as expected, without any reliability issues. The experimental GSHP system is designed to test whether GSHP can replace wall-mounted air-conditioning systems (HVAC) as the industry standard.

In addition to the experimental Cornell GSHP system, simulation and validation models of the energy performance of the GSHP cooling for cell towers are being developed to investigate different energy demands and climatic conditions. The validated simulation models will be a major component in the development of a regional systems engineering model to analyze the energy, environmental, and economic costs and benefits of using GSHP for climate control at over 18,000 Verizon cellular tower shelter sites nationwide.

We are grateful for the opportunity to share this Cornell-Verizon innovative work with the STARS program. The Cornell-Verizon Wireless Geothermal Heat Pumps for Cooling Cellular Tower Shelters Project is just one example of the viability of using geothermal energy resources to address our nation's current next generation energy solutions.

Sincerely,

A handwritten signature in black ink that reads "Jefferson W. Tester". The signature is written in a cursive style with a large, looped initial "J".