PRELIMINARY TECHNOLOGY ASSESSMENT

# Socially Driven HVAC Control System

## What is this Technology?

The socially driven web-based thermostat is a heating, ventilation, and air conditioning (HVAC) control system that enables office building occupants to control their thermal environment through a mobile device or web page. The software collects and processes occupant preferences in a "social networking /gaming" environment; artificial intelligence technologies then calculate the most efficient way to satisfy those preferences using the building's HVAC system.

## Why is GSA Interested?

Office workers' self-assessment of their productivity is strongly correlated with the comfort of the temperature in their work environment yet, according to a study conducted by UC Berkeley's Center for the Built Environment, less than half of building occupants report being comfortable with their office temperature. By enabling office occupants to control the temperature of their office work space, the socially driven HVAC control technology has the potential to save energy, improve occupants' satisfaction and productivity, and minimize the time building maintenance staff spend adjusting office temperatures or reluctantly "over cooling" office space. The GSA study will also consider software implementation, security, and start-up processes.

**ENERGY EFFICIENCY** Extrapolation from a pilot installation in Northern California indicates potential electricity and natural gas cost savings of more than $16,000 per year for a 100,000 $ft^2$ building, operating 10 hours a day, 5 days a week. Buildings in colder climates might save less than buildings in warmer climates.

**COST EFFECTIVENESS** Under a monthly subscription model, savings in a 100,000 $ft^2$ building with standard operating hours could total $5,000 per year.

**OCCUPANT SATISFACTION** Tenant acceptance, ease of use, and satisfaction associated with using a socially driven system to maintain a comfortable working environment will be evaluated.

**OPERATIONS & MAINTENANCE** The operations and maintenance for this system should be no greater than for other building controls, though it may free up maintenance personnel time and reduce overall building maintenance staffing requirements.

**DEPLOYMENT POTENTIAL** The socially driven HVAC control system can be deployed in any office building where there is a need for temperature regulation and the technical capacity for installation, security, and start up processes.

*Adapted from a report by the National Renewable Energy Laboratory. The Green Proving Ground program, in association with a federal laboratory, is subjecting the Socially Driven HVAC Control System to real-world measurement and verification in GSA buildings. Findings from that investigation will be available in late 2014 or early 2015.*

**The Green Proving Ground program leverages GSA's real estate portfolio to evaluate innovative sustainable building technologies. The program aims to drive innovation in environmental performance in federal buildings and help lead market transformation through deployment of new technologies.**