

## **GSA Green Building Advisory Committee – Zero Net Energy Task Group Draft Findings and Recommendations – November 12, 2013**

The Zero Net Energy (ZNE) Task Group was formed following the May 1, 2013 meeting of the GBAC, and met by web-enabled meeting three times between October 23<sup>rd</sup> and November 6<sup>th</sup>. Committee participants and observers included:

### GBAC Representatives:

Dan Burgoyne (chair), State of CA  
Bucky Green, EPA  
Dennis Maloskey, State of PA  
Barbara Nadel, Barbara Nadel Architects  
Bob Fox, Cook + Fox Architects  
Projjal Dutta, NY State MTA  
CJ Cordova, Veterans Affairs  
Christina Stamper, Veterans Affairs  
Nico Kienzl, ATELIER Ten  
Kent Peterson, P2S Engineering  
Sarah Jensen, DOE FEMP

### GSA Attendees & Observers:

Ken Sandler, GSA  
Michael Bloom, GSA  
Don Horn, GSA  
Jason Sielcken, GSA  
Kelli Canada, GSA  
Patrick Dale, GSA  
Judith Heerwagen, GSA  
Brian Gilligan, GSA  
  
Shanti Pless, NREL  
Melinda Tomaino, AGC

The ZNE Task Group worked to better understand the definitions and issues related to achieving ZNE on GSA as well as other federal buildings, and to recommend policies and goals for GSA and other federal facilities.

### **First priority is to reduce energy use**

The ZNE Task Group agreed and wanted to stress that the first priority leading up to achieving ZNE on facilities should always be to reduce energy as much as possible through various means including energy efficiency retrofits, reduced plug loads, and conservation measures, prior to introducing renewable energy. It has been recommended that ZNE buildings should reduce energy use at buildings to levels 50% or more than typical buildings of similar types.

### **Definitions of ZNE**

The ZNE Task Group reviewed several definitions of ZNE from various sources, and heard a review of ZNE definitions from NREL's Shanti Pless, who has contributed to several papers about ZNE definitions, and which are referenced in the Whole Building Design Guide (WBDG) webpage: <http://www.wbdg.org/resources/netzeroenergybuildings.php>. Agreement was met that the definitions in the WBDG should be used, and recommend prioritizing the Site Energy definition as the preferred definition as follows:

**Net Zero Site Energy** - A site ZEB produces at least as much energy as it uses in a year, when accounted for at the site.

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### **Priorities for sources of renewable energy to achieve ZNE**

The ZNE Task Group reviewed various sources of renewable energy and recommended prioritizing renewable energy sources used to achieve ZNE as follows:

1. Generate energy onsite utilizing building surfaces or building site to equal combined energy/gas use over course of year
2. If onsite energy production is not possible to the extent needed, then off site renewable energy sources can be used to generate electricity or hot/chilled water
  - a. Intended for any renewable you bring to your site to use within the facility (e.g. wood chips, liquid fuels, etc. required to generate and harvest off site). This expands the energy source boundary to beyond the building's footprint, but the energy is still used on site.
3. Install and Purchase of off-site energy from Green-E or other equivalent Renewable Energy Certificate (REC) programs within the community energy scheme (to limit boundaries). Continue generating or purchasing off-site to maintain ZNE status.
  - a. Includes dedicated off-site generation (e.g. wind turbine or PV array, etc.) rather than buying RECs.

### **Recommended policy for ZNE on new construction and major renovations**

The ZNE Task Group reviewed the existing federal executive order, and existing GSA goals and targets related to ZNE on federal buildings. In addition, the group saw a presentation about the ZNE Aspinall building renovation project, and discussed current ZNE projects and efforts underway. The following policies and goals are recommended for approval by the GBAC:

1. All new construction & major renovations initiated by 2020 shall be designed and constructed to achieve ZNE by 2030
  - a. This is consistent with current executive order requirement
2. Each GSA region shall initiate at least three ZNE pilot projects by 2015
  - a. This is consistent with current GSA goal to develop ZNE experience in each region on various building types
  - b. Agencies with larger building portfolios (and often more opportunities for these projects) should lead the charge for implementing these recommendations.

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**Recommended policy for ZNE on existing buildings**

The ZNE Task Group reviewed ZNE policies by California, Massachusetts and other government entities related to existing buildings and the need for the existing building portfolios to work toward deep energy efficiency and ZNE. The following policies and goals are recommended for approval by the GBAC:

1. By 2020, each GSA region should retrofit and verify one percent of their building area to be ZNE. Other federal agencies are encouraged to follow similar targets.
2. By 2025, each GSA region should retrofit and verify ten percent of their building area to be ZNE. Other federal agencies are encouraged to follow similar targets.
3. By 2030, each GSA region should retrofit and verify fifty percent of their building area to be ZNE. Other federal agencies are encouraged to follow similar targets.