



Building America Stage Gate 3 Initial Community Opportunities Summary Report

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Building America Initial Communities Summary Report

Executive Summary

Title: Initial Communities Summary

Overview

The purpose of this report is to provide a concise summary of BA Gate 3 Community opportunities that are likely prospects for research in 2009 and beyond.

Key Results

BIRA has twenty two community-level projects lined up spanning three climate zones. Redundancy in a particular climate zone is being viewed as a benefit as current market conditions do not guarantee that all projects will proceed as planned or may be delayed. Several communities demonstrate specific technologies of interest to BIRA and may be studied for the purpose of gathering performance information and introduction to the production building environment.

Gate Status

Cold Climate: BIRA has five projects anticipated in the Cold Climate. This number is expected to change due to BIRA's involvement in the Kennecott Land development in the Salt Lake area of Utah. These projects are only in their preliminary phases and are not included in this report, however, it is expected that the communities will be in the 50-60% WHES range and could qualify as research opportunities. For further information regarding the Kennecott Land development, refer to the BA Gate 1A 40 % Cold Climate report.

The case study report for one cold climate project, Devoted's Mediterranean Villas, in Pasco, WA, is expected to be delivered in time to meet the 40% Cold Climate Joule Milestone.

The Utah communities (Snow Creek in Park City and Webster School Cottages in Magna) may also be constructed in time to be included as a 50% Cold Joule Milestone community. BIRA will coordinate with the DOE, NREL and BSC in this regard to this project.

The GEOs project in Arvada, Colorado is projected to be constructed in late 2009 and will achieve 50%+ WHES. A BA Gate 2 prototype evaluation plan has been developed for this project.

The Artistic Homes project in Aztec, New Mexico is project to be built in mid 2010. All 500 homes will be Net-ZEHs. BIRA intends to work with the utility to develop a special program for the project.

Marine Climate: BIRA has four project opportunities projected in the Marine Climate at the 50% WHES level. One of these projects will be a community built by a builder that constructed 40% Marine communities. As was the case with the 40% Marine communities, all the 50% Marine communities are located in Washington and Oregon. BIRA continues to seek out involvement in Californian Marine projects, but the housing market is a significant hurdle at this time.

Hot/Mixed-Dry Climate: The Hot/Mixed-Dry Climate is showing a great deal of promise with nine project opportunities in various phases of development. Some of these projects are very far down the line and may not be ready for analysis by the time BIRA is conducting research for the community's respective Joule milestone. BIRA has identified benefits of working with developers directly as one contact may lead to 1,000s of homes. However, the developers' timelines can be very long, making it difficult for BIRA to ensure a project will be under development when we are ready to perform the research.

Hot Humid Climate: BIRA has seven military project opportunities in the Hot Humid Climate (2000+ homes in Oahu, Hawaii) at the 40% and 50% WHES level. Forest City is building 4 phases. Phases 2, 3 and 4 are in the 40%-50% WHES level and are:

- Ford Island (40%)
- Catlin Park (40%)
- Kapoho (40%)
- Manana (40%)
- NCTAMS (40% and 50%)
- Waikulu (40% and 50%)
- Mololani (50%)

Although these projects are being built by the same developer, they have different General Contractors and subcontractors, and incorporate different features and HVAC systems. BIRA also plans to qualify these projects under the Builders Challenge program.

Project Overview

Stage Gate 3 evaluates the performance of final production building designs through analyzing a community of homes, primarily for energy consumption. For a community to be eligible for this gate, at least ten houses must be constructed using the Building America strategy for the particular milestone being tested. The objective of this report is to provide a concise summary of communities that will meet this requirement and either are being, or likely will be, used for Stage Gate 3 research. Details regarding each community's climate, location



and expected savings level as well as when BIRA expects to perform the research are included, providing a tool by which BIRA can gauge current research progress and provide an informal timeline for when future Building America Joule milestone research is expected.

BIRA has focused its efforts in the Cold, Marine, Hot Humid and Hot/Dry climates that predominate the western states. Research has recently been completed at the Stage Gate 1A level for 40% Cold, 50% Hot/Mixed Dry and 50% Marine. Because of this, BIRA holds particular interest in communities that are expected to perform at the 40% level in Cold, 40% and 50% level in Hot Humid, and 50% in Hot/Mixed Dry and Marine Climates. However, BIRA has not shied away from the opportunity to be involved with projects that expect to perform beyond these levels or in other climates.

During 2008, BIRA completed its analysis of five 40% Marine communities in Washington and Oregon. The results were positive, showing that community scale projects were cost effective and marketable at the 40% level. Ruhoff Home Builders have future communities being included in this report for the 50% Marine milestone. This continued push from this building partner toward continual performance improvement, despite the economic downturn, demonstrates not only their commitment to energy efficiency, but also the competitive edge that it gives in the market.

Cold Climate

City of Park City, UT (Developer)

Community: Snow Creek Cottages

Location: Park City, UT

Expected Savings Level: > 50%

Status: 2 homes have been completed with another 2 homes currently under construction. Final build out will be 13 homes. Analysis and reporting can begin in 2009.

Unique Features: Some of the houses will have PVT, remaining will have PV and SDHW. All will have GSHP, SIPS or equivalent and Passive Solar Heating.

Devoted Home Builders

Community: Mediterranean Villas

Location: Pasco, WA



Figure 2- Location of BIRA Projects in the Cold Climate

Expected Savings Level: >40%

Status: 37 homes have been completed with another 8 homes currently under construction. Final build out will be 70 homes. Stage Gate 3 case study report for 40% Cold Joule Milestone to be coordinated with Cold Climate lead, BSC.

Unique Features: All ICF walls, duplexes, affordable homes at \$200,000, tankless water heating, HRV, 2.5 ACH50, 8.5 HSPF Heat pump.

Artistic Homes

Community: Hart Valley

Location: Aztec, NM

Expected Savings Level: >50%+ (Net-ZEHs)

Status: This project is still in the design stage. Construction is expected to begin in mid 2010. Final build out will be 500 homes. Analysis and reporting can begin in late 2010.

Unique Features: High performance EE, Ducts in conditioned space, Solar Electric and thermal, and OVE Framing.

Salt Lake County Affordable Housing

Community: Webster School Cottages

Location: Salt Lake City, UT

Expected Savings Level: 50%

Status: 3 homes have been completed with another 2 homes currently under construction. Final build out will be 16 homes. Analysis and reporting can begin in 2009.

Unique Features: Solar Thermal, and OAsys 2- Stage Evaporative Cooler.

GEOS

Community: GEOS Community

Location: Arvada, CO

Expected Savings Level: 50%+

Status: Final build out will be 80 homes. Analysis and reporting can begin in 2010.

Unique Features: Solar Thermal, GSHP, and OAsys 2-Stage Evaporative Cooler.

Hot/Mixed-Dry Climate

K Street LLC

Community: O Bel Sole

Location: Lancaster, CA

Expected Savings Level: 59%

Status: Currently 17 homes have been completed. Final build out will be 42 homes. Utility bill analysis and reporting on existing and remaining homes will begin in 2010.

Unique Features: Utility/Home End-Use Monitoring, Triple Glazed Windows, 100% Solar PV.

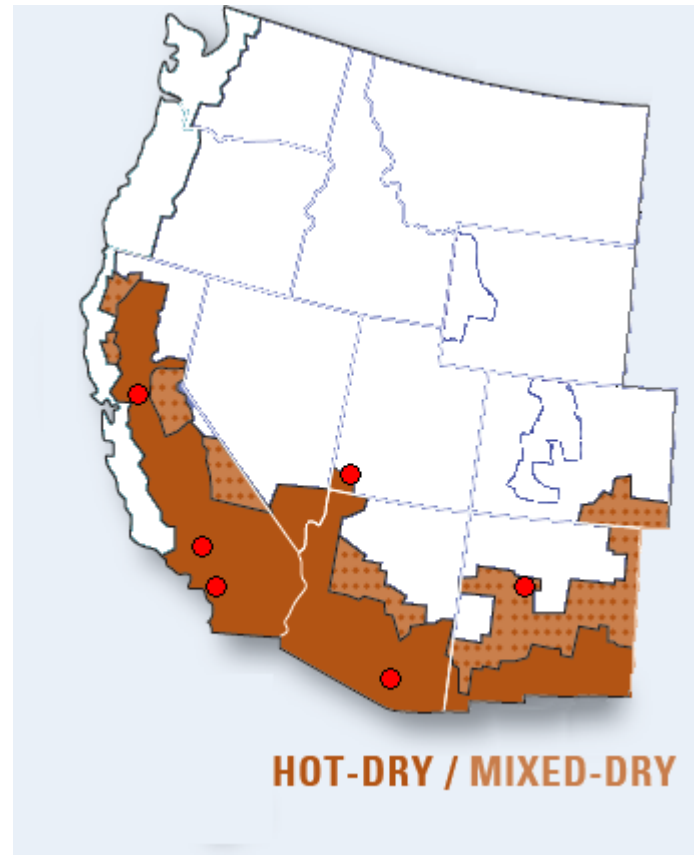


Figure 3 Location of BIRA Projects in the Hot/Mixed-Dry Climate

I-Build

Community: TBA

Location: Hurricane, UT

Expected Savings Level: >50%

Status: This project is still in the design stage. Construction is expected to begin in late 2009. Final build out will be 227 homes. Analysis and reporting can begin in 2009.

Unique Features: High performance EE, SIP walls, Solar Electric, Solar Thermal, and devices to reduce plug loads will be installed.

Rancho Mission Viejo (Developer)

Community: The Ranch

Location: Mission Viejo, CA

Expected Savings Level: >50%

Status: Construction is expected to begin in 2010. Final build out will be 1,170 homes in phase 1. Future build out is expected to be 14,000 in the next 20 years. Analysis and reporting can begin in 2010.

Unique Features: Utility/Home End-Use Monitoring, Sustainable Green Community, Neighborhood Electric Vehicles (NEVs), Smart Grid. This community may be a cornerstone project for California PUC and IOU energy efficiency program administrator Sempra Utilities (SCG and SDG&E).

Habitat for Humanity

Community: TBA

Location: Alamogordo, NM

Expected Savings Level: >50%

Status: This project is still in the design stage. Construction is expected to begin in 2010. Final build out will be 43 homes. Analysis and reporting can begin in late 2010.

Unique Features: High performance EE, Ducts in conditioned space, Solar Electric, and Solar Thermal.

PepperViner

Community: Sunny Pointe

Location: Tucson, AZ

Expected Savings Level: >50%

Status: This project is still in the design stage. Construction is expected to begin in late 2009. Final build out will be 267 homes. Analysis and reporting can begin in 2010.

Unique Features: High performance EE, Ducts in conditioned space, Solar Electric, and Solar Thermal.

Coldwell Banker

Community: TBA

Location: Davis, CA

Expected Savings Level: >50%

Status: This project is still in the design stage. Construction is expected to begin in late 2009. Final build out will be 29 homes. Analysis and reporting can begin in 2010.

Unique Features: High performance EE, Solar Electric, and Solar Thermal.

Hot/Humid Climate

Forest City

Community: Military Housing

Location: Oahu, Hawaii

Expected Savings Level: 40% and 50%

Status: Expected build out is over 2000 homes by 2014. BIRA is working with DOE and Forest City on phases 2, 3 and 4 to integrate Builders Challenge into development of military housing. Final build out for phases 2, 3 and 4 is 2,000+ homes. Currently 1,000 homes have been completed.

Unique Features: Steel framing, Solar Electric, Thermal. There are interesting challenges related to who receives benefits and who pays costs of energy upgrades in military setting.



Figure 4 Location of BIRA Projects in the Hot/Humid Climate

Marine Climate

Howland Homes

Community: Issaquah Highlands

Location: Issaquah, WA

Expected Savings Level: >50%

Status: No homes have been completed with four homes currently under construction. Final build out will be 10 homes. Community analysis can begin in 2009.



Figure 5 Location of BIRA Projects within the Marine Climate

Unique Features: Community Geo-exchange, High Efficiency Heat Pumps, PV, double stud walls, hydronic heating. Project website: <http://www.z-home.org/>

New Tradition Homes

Community: Serena Estates

Location: Vancouver, WA

Expected Savings Level: >50%

Status: Final build out will be 10 homes. Community analysis and reporting can begin in 2010.

Unique Features: Analysis of various crawlspace designs, and ducts in conditioned space.

The WJM Studio

Community: Mirror Lake Highlands

Location: Federal Way, WA

Expected Savings Level: >50%

Status: The project is in the design stage. BIRA has benchmarked the plans. Final build out will be 24 homes. Community analysis and reporting can begin in 2010.

Unique Features: Analysis of various crawlspace designs, SIP walls and roofs, and ducts in conditioned space.

Ruhoff Home Builders

Community: Wiley Creek

Location: Eugene, OR

Expected Savings Level: >50%

Status: 2 duplexes have been completed with 6 more currently under construction. Final build out will be more than 10 buildings. Analysis and reporting can begin in 2009.

Unique Features: Project will be building on 40% BA work with solar DHW, exterior foam sheathing