



***Moving Forward***  
**Innovation Workshop**

**Executive Summary**

Prepared for IHADA

December 2015

# Executive Summary

## The Project and Collaborative Workshop:

The Indiana Housing and Community Development Authority (IHCDA) is using a portion of its federal funding for affordable housing to support two pilot projects to push the boundaries of integrated housing development with transportation in a total cost of ownership (TCO) model incorporating energy efficiency.

IHCDA partnered with Energy Systems Network (ESN) to develop and execute its Innovation Workshop November 18-19, 2015. The workshop brought together subject matter experts with the chosen teams of developers to establish an environment of collaboration and innovation in the very beginning of the project. The Workshop took a systems-level approach to integrating opportunities, always looking to improve efficiency, generate cost savings, and increase quality of life for residents (see mission below).

## Innovation Workshop and Results

Participants in the workshop spent two very active days working in a collaborative process to set goals, identify opportunities, challenges, and integrated solutions to overcome those challenges. This resulted in developing two high-level plans that would meet the Stretch Goals. The plans can now be used to guide site selection and project development. This Executive Summary provides a brief overview of the key workshop results so that the IHCDA and developer teams can begin their projects without waiting for the in-depth workshop report.

The workshop was opened by Lieutenant Governor Sue Ellspermann, who also returned for the plan presentations at the end. Perry Hammock, Executive Director for the Indiana Bicentennial Commission, also joined the closing session to present the letter selecting Moving Forward as a Bicentennial Legacy project.



**Mission Statement**  
Moving Forward will enhance the “Quality of Life” for Hoosiers through innovative and integrated housing and transportation solutions to increase affordability, improve environmental quality, and create greater community within the site, region, state, and beyond.

# Setting Minimum and Stretch Goals

## Project intention

The intention of the Moving Forward project and process is to push the current boundaries in integrating housing and transportation to create truly affordable housing and mobility systems. To achieve this, workshop participants established two levels of goals in each project area.

## Minimum Goals

These goals will set the baseline requirements for the final projects to meet. While they will be “minimums” for these projects, these goals are intended to far exceed current standards for energy efficiency, environmental quality, materials, water, transportation, etc.

## Stretch Goals

Participants also set stretch or “out of the box” goals beyond the minimum goals. The stretch goals became the actual targets that all participant proposals aimed to define and accomplish. The strategies and high-level plans developed on Day Two of the workshop focused on achieving the stretch goals.

## Looking Beyond Certification Programs

The goals set at the Workshop are not meant to conform to existing standards and certification programs, but certification programs can provide useful insights and potential baseline targets in different areas.



# Transportation & Energy Goals

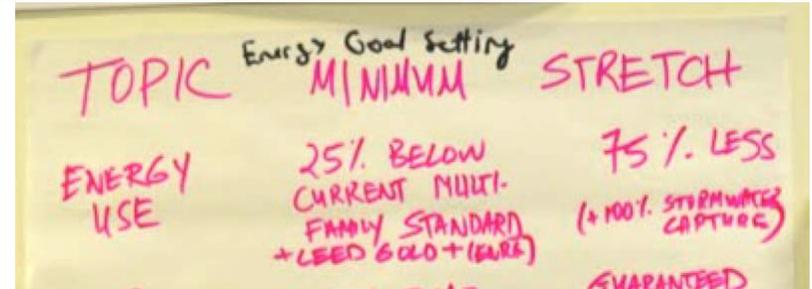
The Transportation & Energy group was tasked to look at both the potential or expected transportation needs of the tenants and the energy use of various transportation options. This group considered how to create a suite of options for a development that could be selected from in order to meet the actual needs of the tenants in the community, once a site is selected.



Minimum Goals	Stretch Goals
Personal vehicles minimized (no more than 1 car for each person)	No personal vehicles required – cut comparable average by % (TBD), greater than min
Incentivize reduced rate of transportation – cut comparable average by % (TBD)	Disposable income and quality of life rise after rejection of car ownership
Viable transportation alternatives accepted by residents (reduce personal vehicle demand)	Seamless integration of energy between the built environment and transportation
Viable business model for developer to take responsibility for buildings & transportation	Each development, <i>independent</i> of grid, creates its entire transportation energy needs
Paradigm change of residents	Waiting list, aspiration, people lining up to enter residence, regardless of income
Voice of customer in design phase	Private sector sustained (no Fed \$ needed)

# Energy Efficiency & Supply Goals

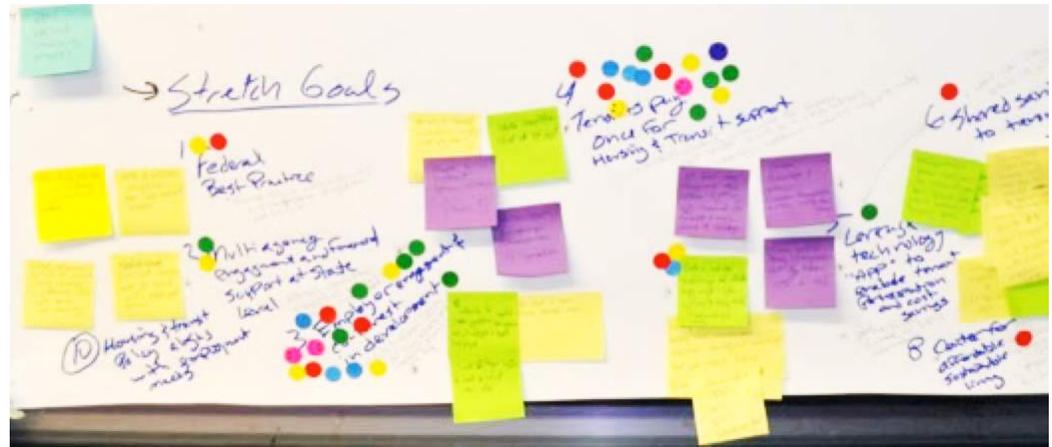
The Energy Efficiency & Supply group considered where energy was being used and focused on reducing the individual and overall demands for energy, while still providing the same level of comfort and energy service (e.g., light, heat, etc.). Then this group looked at options to meet the reduced energy demand with different energy supplies and solutions.



Topic Area	Minimum Goals	Stretch Goals
Energy Use	25% Below current multi-family standard & LEED Gold & Energy Star	75% Below current standards plus 100% Stormwater capture
Energy Control	Real-time monitoring & feedback with individual metering & occupant training	Guaranteed energy cost w/automated controls and ongoing user education (Center of Tech Excellence)
Energy Generation	Supply Onsite Solar/Wind Harness geothermal CHP/waste heat	Net-energy export (negative bills) with extended islanding ability or grid independence
Transportation Electrification	Smart charging for EVs V1G responsive to net loads	V2G use of vehicles as energy storage & full battery reuse
Utility Relationship	Involvement in planning Net metering agreement	Utility as investor

# Policy & Finance Goals

The Policy & Finance group developed a number of goals under the broad categories of government, finance, housing and transportation, and customer. They used their minimum goals to develop 10 Stretch Goals, many of which received a substantial number of votes during the voting session. These Stretch Goals are included here:

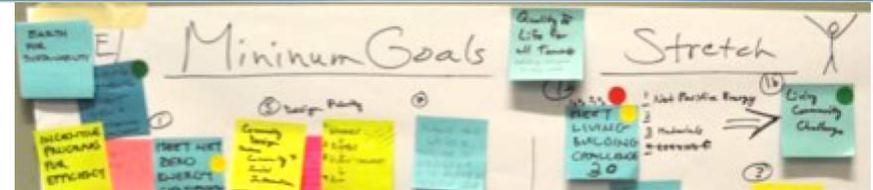


## Stretch Goals

Set Federal Best Practices	Shared savings payment to tenants
Multi-agency engagement and financial support at state level	Educate and train onsite
Employer engagement and co-investment in development	Center for Affordable Sustainable Living
Tenants pay once for housing and transportation support	Workforce housing and mixed income in fair housing community
Leverage technology apps to enable tenant participation and cost savings	Housing and transit policies align with employment needs

# Built Environment Goals

The Built Environment group developed a broad set of Minimum Goals and then set additional Stretch Goals that presume the Minimum goals are met, regardless. The overall goal was focusing on quality of life for all tenants.



Minimum Goals	Stretch Goals
Meet Net Zero Energy Certification	Meet Living Building Challenge 3.0
Two renewable energy sources	Incorporate Living Community Challenge
Meet WELL Building Standard & LEED v4 Gold	Net Positive Water
Design Priorities: walkable, then bikeable, then transit, then car	Match \$/sq ft for comparable, conventional projects
Demand controlled ventilation & IAQ standard	VOC and CO2 at 450 ppm
Incorporate education & jobs for tenants	Eliminate concept of waste
Variety of housing types & mixed uses	Building biometric system
Reduce housing/trans. costs to 30% of budget	Working & edible landscape
Total and continued building commissioning	Financing for retrofits & upgrades to systems
Permanent affordable & workforce housing	Improvement over time with lessons learned

# Systems Integration Goals

The Systems Integration group took a very broad approach to developing goals for the Moving Forward pilot projects. They looked at goals for both urban and rural settings to recognize the differences between and challenges of the two. This group considered integration goals for transportation, energy, food, community, waste, water, and economics. The group summarized their highest Stretch Goals into three categories: Community, Built Environment Energy, and Transportation Energy

## Community thru Built Environment

- “Highest Quality of Life”
- Goal: Multi-generational, multi-economic community sharing, producing and managing:
  - Technology, food, education, work, transportation, security, water, healthcare, play, and energy (i.e., social capital)
- Measurement: Love, life, freedom, integration

## Energy in Built Environment (BE)

- Net Positive utilizing full Life Cycle Assessment
- Goal: Capable of 100% Energy and Macro-Grid independence with electron harvesting & capture common among BE & Transport moving toward *external* supply outside of community.

## Energy in Transportation

- Net Positive utilizing full Life Cycle Assessment
- Goal: Zero emissions transportation at the system level within community and external to community with common and integrated energy supply (e.g., solar, etc.)

# Moving Forward Mission Statement

## Developing a Mission Statement

During the workshop, participants voiced a need for some clarity around the mission of the Moving Forward program and developing a summary statement in concise language. There was demonstrated consensus around a number of topics repeated throughout both the breakout sessions and the plenary conversations. The second day of the workshop, the Systems Integration group took on the task of bringing together the different things heard throughout the workshop into a concise Mission Statement for Moving Forward.

### Mission Statement

Moving Forward will enhance the “Quality of Life” for Hoosiers through innovative and integrated housing and transportation solutions to increase affordability, improve environmental quality, and create greater community within the site, region, state, and beyond.



# Policy & Finance Results

## Task

In general, the Policy & Finance group was tasked with looking at the bigger picture of Moving Forward to leverage existing opportunities and create new ones in both arenas of rural and sub-urban or “open” areas. A number of opportunities identified the first day were selected as key opportunities in the voting session at the end of that day. The second day of the workshop focused more on the solutions and plans to keep the program successful, both for the initial two pilot projects and into the future.

## Priorities

- Connect / integrate employer-based housing with supporting workforce development services
- Maximize collaboration to achieve Stretch Goals and overall project goals beyond initial sites
- Attract additional investment beyond Section 42 funds, preferably replicable funding

## Actions

- Engage economic and workforce development agencies to identify key and target employers
- Identify regions and/or cities that are already pursuing strategic investments in quality of life and place
- Engage government resources at state and federal level
- Link with other stakeholders for financial and in-kind investment



# Open Site Planning Group Overview

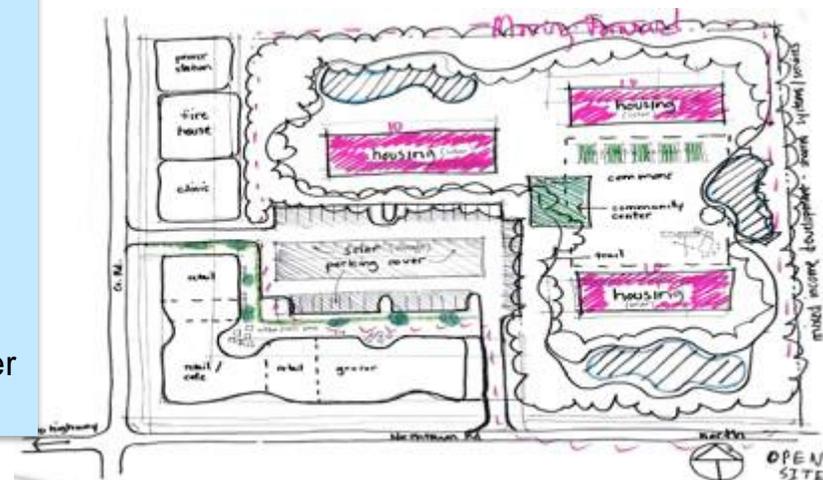
## Task: Develop a Plan for an Open Site that Achieves the Stretch Goals

On day 2 teams were mixed with developers leading the tasks. The “Open Site” (BWI) team developed a high-level plan for an “open-site” in a sub-urban or rural area to discover if the Stretch Goals could be achieved. Overall, this team set goals in giving low income people more power and control over their quality of life, transportation, energy, food, and water. The team also set a goal for the mixed-use, mixed-income are to demonstrate net-zero energy consumption for the site.



### Highlights

- 30-40 low income, affordable housing units
- Solar PV on roofs with integrated and 2-way energy exchange with battery storage system (e.g., V2G, B2G)
- Rain water collection for gray water use and monthly expense reduction
- Pleasant walking paths to grocery, health services and offices / employment
- Incentives for shared cars over private vehicles
- Direct connection to market-rate housing for share services
- Units have high efficiency windows, radiant barriers and high insulation, dehumidification systems, fresh and clean air, vertical gardens, smart or connected devices, gray water reuse, and tenant incentives for efficiency



# Urban Infill Planning Group Overview

## Task: Develop a Plan for an Urban Infill Site Achieves the Stretch Goals

This “Urban Site” team (led by Pedcor) developed a high-level plan for an urban infill site near a downtown core to explore how the Stretch Goals could be achieved on a smaller, fixed footprint. The team placed a high priority on site selection that would allow the project to make the most of existing assets while expanding the assets and the community integration opportunities as well.

### Highlights

- Multiple strategies to reduce parking and incentivize walking, bikes, transit, car share
- Partnership with energy company for integrated solar PV
- Existing and new technology to engage tenants in energy efficiency
- Utilize “second life” batteries for energy storage and a DC sub-grid for emergency systems
- Commercial space on first floor
- Units have well-sealed R30 walls, ceiling fans, LED lighting, ductless HVAC, open floor plans
- Goal of saving 60% over national standards and reach for Net Zero Energy certification



# Key Points for Moving Forward

## Recap and Next Steps

The Moving Forward Innovation Workshop created a collaborative environment that challenged every participant to question previously perceived limitations on “how best to integrate high-performance housing and transportation with affordability.” Out of the conversations, the Systems Integration group developed a Mission Statement that captures the program purpose.

The Stretch Goals pushed the planning groups to think beyond the boundaries of a selected site and identify aspects of sites that would make the goals more achievable. Each group developed a plan that met the Stretch Goals for affordability, integrated housing and transportation, environmental quality and efficiency, community development, and – most important – improved quality of life.

The developers can apply the goals, and outcomes of the workshop to their Moving Forward projects. The stage is set for continued collaboration to incentivize each team to push further to achieve the Stretch Goals of the workshop, and to build communities that set new standards for efficiency, affordability, and transportation in affordable housing programs.

## Moving Forward Mission Statement

Moving Forward will enhance the “Quality of Life” for Hoosiers through innovative and integrated housing and transportation solutions to increase affordability, improve environmental quality, and create greater community within the site, region, state, and beyond.



# MOVING FORWARD