Facilitator's Guide

Table of Contents

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The role of the facilitator is to lead the project team through an Integrative Design charrette. This Guide is meant to orient a charrette facilitator and project team in preparation for an Enterprise Green Communities Charrette.

1. Introduction to the Enterprise Green Communities Charrette program

Enterprise supports affordable housing developers meeting the Enterprise Green Communities Criteria, beginning with integrative design. An integrative design and development process is a fluid one, which takes into consideration viewpoints and technical expertise from everyone involved in a particular project from early schematic design to occupancy and beyond. It is Enterprise's experience that an integrative design process can lead to optimal outcomes related to achieving a development project's green goals. This is so because the process makes room for the project team to explore cost-effective trade-offs that come from considering the building as a whole system within the environmental and cultural context of the neighborhood and region.

One of the tools offered to project teams is the Enterprise Green Communities Charrette Grant. These grants are offered as a way to kick-start an integrative design process for green affordable housing projects. By bringing together a diverse group of stakeholders to establish goals, identify strategies, discover synergies, and create a roadmap for on-going implementation, the Charrette program is designed to set projects on the path to success.

2. Why a Charrette?

The Draft ANSI Consensus *Integrative Design Standard© for Design and Construction of Sustainable Buildings and Communities* defines a charrette as follows: "A fast-paced intensive workshop with key client, design, engineering, and building participants. . . . Charrettes provide a framework for achieving significant production and meaningful agreement among participants in relatively brief amounts of time." The initial design charrette should result in a clear vision of project goals and individual responsibilities, but not necessarily final design decisions.

The goals of the Green Communities Charrette program are to:

I. *Align the team around a common purpose*. This means that the team will become engaged and invested in the development of a set of guiding principles. Sustainability and the needs of the occupants should be incorporated into the very notion of project success, and all team members must understand their role in bringing that success to fruition.

II. *Create a common level of understanding.* In order for the team to fulfill the project goals, members have to identify and understand a common set of green building strategies. The charrette offers an opportunity to educate the team on sustainability, green building and the Enterprise Green Communities Criteria, integrative design, and how those topics relate to the project.

III. *Assign champions for implementation.* In some cases, the facilitator of the charrette will be a core member of the design team and will lead the charge for sustainability throughout the project. But in many cases, the facilitator will be brought in with the specific task of leading the charrette(s) and documenting the outcomes and next steps for the project team. Therefore, it is necessary to identify internal champions, leaders who will take responsibility for sustainability measures from beginning to end.

IV. *Launch an integrative design process*. While early design charrettes are key to implementing sustainable design, they mark the start—and not the end—of the process. The initial charrette can be used to create a roadmap for how the team will collaborate, establish critical milestones to be reached, and determine how performance will be tracked and measured over time.

V. *Increase the sustainability and performance of affordable housing*. Ultimately the goal is to create and restore affordable housing that protects the environment and enhances the well being of the occupants. Green building can result in more efficient use of materials, reduced use of energy and water, and healthier living environments. Charrettes begin a process that should result in real and measurable performance.

3. A Summary of the Charrette Process

High performance affordable housing projects are most effectively developed through a design process that invites all relevant stakeholders (e.g. developer, residents, architect, a consulting general contractor/cost estimator, existing or future occupants, maintenance personnel, etc.) to participate from the very beginning of the project. The purpose of this composite design team, and design process utilizing charrettes, is to encourage the exchange of ideas and information, thereby allowing truly integrative solutions to take root. A forum and methodology is provided where every team member is encouraged to cross-pollinate with others involved in the design in order to identify solutions to problems that may relate to, but are not typically addressed by any one team member's specialty. The objective is to have every member of this composite design team understand the issues that the other members need to address; thus, more thorough and integrated solutions can result.

The charrette method is particularly important when the developer is not one person but consists of a number of interested people. This is a successful way to educate all the participants: architects, engineers, residents, community stakeholders, and the development team. There are many advantages to this approach: the project team members are invited to participate throughout the process; participants are educated about the issues and participate in the team's investigations in order to "buy in" to the proposed solutions; the educational process is accelerated, decisions are verified, adversity is diminished, the nuances of organizational issues are learned, and the design process is expedited. And while final resolutions are not necessarily produced in the charrette, most of the issues are explored with all the involved parties present.

Most affordable housing projects have great potential for incorporating advanced green building design techniques and systems. Part of the team's job is to find an acceptable balance between the economic, cultural, and ecological components of sustainability that will meet the project team's objectives and serve the occupants' needs. The integrative design process is the key to accomplishing this in a way that produces high performance green homes that meet Enterprise Green Communities Criteria within

budget; effective charrettes are primary components of this process.

4. Charrettes and the Integrative Design Process

Charrettes serve as a primary integrative design tool by:

- Revealing that all systems and components of building projects (like all things and all of life, for that matter) are connected and interrelated.
- Aligning all project team members around why and how these interrelationships will be exploited and optimized for the purpose of improving performance and reducing costs – both construction costs and operations costs.

5.1 Interrelationships: Understanding and Facilitating Best Practices of Integrative Design

When we work in a conventional way, one that isolates design and construction disciplines into silos (architects, mechanical engineers, landscape architects, builders, etc.), fragmented solutions are created. These "solutions" can, and do, create unintended consequences – sometimes they are positive, but mostly they are negative. The corollary is that when we work to integrate areas of practice, it becomes possible to find performance and cost synergies and benefits.

Consequently, charrettes are critically important, because pursuing integrative design requires that all issues be addressed concurrently, with everyone present, at the earliest possible time. This can be summarized as: **E**verybody **E**ngaging **E**very issue, **E**arly in the project.

5.2 Two Examples of Understanding Interrelationships and Integrative Process Benefits

In the conventional design process, each discipline's representative is expected to design the sub assemblies and systems under his or her control with the most effective benefit for the lowest cost. In the Integrative Process, the full design-building-and-operations team is looking to find overlapping relationships, services, and redundancies, so that potential inter-dependencies and benefits (that otherwise would have gone un-noticed) can be exploited. Normally, previous assumptions and standard practices leave such synergies unexamined; therefore, charrettes can help project teams discover these interrelationships and synergies. Here are two examples of how this works:

1. *Building Systems as a Unified Organism (not separate pieces) – Finding Connections Between Systems*

   <u>Example – Single Family Residential House in the Western USA:</u>
   Before the invention of low-emissivity glass, an energy efficient single family (utilizing passive solar features) 3-bedroom 1,900 square foot home could cost $5,000 more than a conventional house of equal size. This was usually the case, because in addition to the required larger areas of glass, increased insulation and thermal mass were required, and mechanical systems had to be installed to serve as a back-up heat source. When low-emissivity, argon filled glazing appeared in the market, a number of cascading benefits were realized that reduced the cost of a passive solar house to approximately $2,000 less than conventional construction, while at the same time reducing annual energy costs by 50 to 70 percent by utilizing an integrative approach. This is because the augmented thermal properties of these windows, along with their ability to reduce solar heat gain, allow a number of reductions in other systems and elements:

- It is possible to eliminate the usual ductwork runs to the perimeter of the house to bathe the windows with warm air. The ducts are limited to a central trunk serving all rooms from the internal walls. The well-insulated walls and windows no longer need to be warmed by a mechanically supplied heat source, and compensation for the discomfort resulting from our bodies' radiant heat loss to the cold surfaces of the glass is no longer needed, nor is it needed to reduce condensation. As a result, first costs are saved.
- Because the windows are oriented to the south and the walls and windows become more effective insulators, a boiler may no longer be needed. The house is capable of being heated with a large hot water heater. Additional first costs are saved.
- Because the house is so tightly built, the issue of indoor air quality is a concern. The air handler in the house is replaced by an air-to-air heat exchanger for ventilating moisture-producing spaces such as kitchens and bathrooms, addressing sources of mold growth. No money is saved or lost with this action, but the house is much more desirable from a health perspective by addressing indoor air quality concerns that historically plague affordable housing projects.

The approach that emerges from understanding these connections asks us to spend more money on glazing and insulation to achieve the net benefits in overall first cost savings, which result from reduced ductwork and elimination of the boiler. At the same time, significant energy consumption-cost reductions and better indoor air quality are achieved.

This approach works for larger multi-family affordable housing projects as well; however, with larger projects it becomes even more important for teams to engage in parametric energy modeling to reduce loads as much as possible before selecting an HVAC system. In this way, teams can identify cost-saving opportunities, such as an improved shell and passive elements to reduce HVAC demand, thereby making such highly efficient HVAC systems affordable (such as GSHP systems by reducing the number of wells required). Such an approach helps teams make the most out of limited funds and government subsidies for construction costs, while at the same time helping occupants by reducing their energy costs. Integrative design charrettes provide the ideal context for discussing with all team members how to achieve such results – issues particularly important to affordable housing projects, due to their high sensitivity to even small decreases in utility bills.

2. *Building Team as a Unified Organism (not solving problems in isolation) – Breaking Down the Barriers Between Disciplines*

<u>Example – Fostering an Interdisciplinary Process . . . "A Deer in the Headlights":</u>
An early schematic design charrette was convened for a four-story multifamily affordable apartment building in central Pennsylvania with the entire project team, including the project engineers, architect, contractors, the developer, and the Owner. The schema for the design emerged as an elongated rectangle consisting of a central core and two wings. The plan was oriented lengthwise on an east-west axis, with the larger wing to the west and the smaller to the east. An early decision was made to heat and cool the building with ground-source heat pumps. The design architect had decided before this early schematic design meeting that the central

HVAC equipment should be located on the building's roof. Given this decision, the meeting's participants initiated a discussion about piping and ductwork -- specifically, how best to get the piping from the ground-source heat pump well-field up to the top story dwelling unit and adjacent roof, and how to distribute air ducts back down from the air-handling units into the supply-air registers on both the first and second floors of this 80,000-square-foot building.

The team engaged in a back-and-forth conversation, discussing where the piping would go, what the size of the vertical duct shafts should be, how all of this could fit into the central core, and how to avoid conflicts between these distribution components and other building elements such as elevators, structural components, sprinkler pipes, etc. As this discussion unfolded over a period of about twenty minutes, the architect realized that this process was not, in fact, an integrative design process. Rather, this process of deciding (albeit, as a group) how best to assemble these systems amounted to little more than accelerated coordination. Further, the decision to locate the central HVAC system components in the top story unit had been made in isolation (by the Architect) without any input from the other disciplines at the table.

Realizing this, the architect stopped the meeting. He looked across the table at the mechanical engineer, and asked, "if *you* were designing this building, where would you locate the central HVAC system components? Where's the best place for the mechanical room?" The engineer was stunned. He sat in silence; later, he said that he felt like a deer caught in headlights. The architect, noticing the engineer's discomfort, asked what was wrong. He explained, "Nobody's ever asked me that question before." Here was someone with over twenty years' experience designing HVAC systems, yet never in his career had an architect asked him for his expert advice on where to locate the HVAC system components and the mechanical room. It only took a couple of minutes, though, for the engineer to recover.

He suggested placing the ground-source heat pump units in two separate mechanical spaces on the ground floor of the building—half of the units in one room (serving the west wing) and the other half in the other room (serving the east wing). He explained that he could then route supply piping from the well field directly up through the slab on grade to each of these units, thereby eliminating *all* of the piping up to the roof and back. Supply air could be provided with minimal duct runs to the first-floor apartments, and equally minimized with very short vertical duct runs to the second floor units' registers, thereby eliminating a majority of the ductwork that otherwise would have been needed to provide supply air from a centralized rooftop unit. Further still, the engineer noted that since the duct runs would be so significantly reduced, less resistance to airflow would result, which meant that fan sizes could be reduced. Lastly, he explained that instead of facilities staff having to climb a ladder in the janitor's closet to get onto the roof and then go out into the snow and rain to replace filters, compressors, and so on, these activities could be performed in an easily accessible, weather-enclosed space, resulting in significantly improved ease of maintenance over the life of the building, thereby addressing this affordable housing project's high level of sensitivity to decreasing operating costs.

The engineer's solution was elegant. In fact, everyone loved the idea except for one person, the owner, who heard only that he was going to lose 400 square feet of prime lease space from the first floor of his building that he had planned for mixed-use retail leases. Locked into a minimum square footage of lease space, he viewed such an adjustment as impossible. But, after some discussion and calculations, it was determined that this new idea would save the owner $40,000

in base construction costs. Hearing this, the owner happily agreed to make up the lost square footage by adding an inexpensive 18 inches of length to each end of the building. Everyone was satisfied. The significant operational savings that would be realized from both energy savings and simplified maintenance were, as it turned out, icing on the cake.

5.3 Alignment: Facilitating a Process for Identifying and Achieving Stated Goals

When we work in an integrative way, every team member should be engaged in discussions about setting performance goals for every system (such as targets for annual heating energy, ventilation, lighting, and water consumption) and issue to be considered as early as possible in the project – which begins at the charrette. Rather than imposing solutions onto the team and the project, it is important to work to *discover* solutions through a process of co-learning in which design team members learn to ask the right questions. To successfully discover what the design must look like, team members must work together to see key interrelationships: relationships between building systems and the work of design team members, along with relationships between the project and the larger systems it inhabits. To illuminate these relationships, project teams must:

- Question assumptions
- Create alignment
- Foster an iterative process

5.4 Questioning Assumptions: Enabling Creative Thought and Synergistic Problem Solving

One function of charrettes is to help remove presupposed or assumed answers or solutions so that we have a clear view of all possibilities, such as in the above apartment building example. Often we think we know the answers. But *do* we? Many people assume that "going green" in affordable housing will increase costs and result in fewer available units. But an integrative design process often achieves different results, once this belief is addressed. Normally, we begin designing without first checking in on the beliefs and philosophies that are *always* beneath the decisions we make. We simply do not allow ourselves the time to reveal our assumptions. Sometimes these assumptions are so deeply ingrained that we don't even recognize them as assumptions.

A charrette example:

In the late 1990s, the board of an affordable housing development corporation (HDC) in upstate New York wanted to design and build 100 multifamily housing units within an existing multi-use complex that was largely dense residential development. The executive director and board stated that they wanted to construct a LEED Platinum building; moreover, they wanted it to be "the most advanced environmental building in the state." They were clear and firm in their commitment to environmental responsibility.

The HDC was prepared to build a new structure adjacent to a large existing office building that was part of the complex, but had been challenging to keep fully leased. The project's green building consultant and architect felt that the team could not ignore the potential for renovating this existing underutilized structure in lieu of constructing an entirely new building under the principle that building less—or not at all—is generally the most environmentally responsible choice. This idea was proposed to the executive director before the charrette, and she explained that the board wanted this new set of units to serve as a "gateway" building to establish a new image for the complex, and all fund-raising efforts had been centered around this idea. The notion of using an existing building to create that new image was a nonstarter.

The architect remained concerned that ignoring this possibility was in direct conflict with the stated goal of environmental responsibility. A week later, the architect approached the executive director again, requesting that the team be permitted to at least perform a feasibility study and cost-benefit analysis for renovating the existing building. The answer was another and firmer "no." It remained impossible for the architect to reconcile this approach with the stated environmental objectives; so he raised it one more time. The clients responded: "You're the architect, we're the client—drop it."

Soon afterward, a goal-setting and design charrette was convened, which was attended by all twenty-one members of the board of directors, the MEP (mechanical, electrical, plumbing) engineers, civil engineer, contractor, and several additional architects to assist the facilitation of breakout sessions. The program was presented on the morning of the first day. One of the attending architects uninvolved with the project and unaware of the prior repeated attempts to broach the topic, noted the existing underutilized structure and asked, "So why are we building a new building?" In the open-exploration spirit of charrettes, without asking permission, the charrette facilitator made the spur-of-the-moment decision to ask that architect to take a third of the attendees into a separate break out group and explore the possibilities in renovating the existing building, while the other two groups examined possibilities for the design of a new structure.

The break out groups presented their findings that afternoon. By the end of the day, all twenty-one board members realized that they could achieve their goal of creating the optimal building by renovating a significant portion of the existing structure and building a small addition to address their "gateway" concerns. In short, they agreed that an entirely new building was the wrong decision. Prior to this, they simply could not imagine that such a solution was possible.

During the project's next stage, the project team was faced with addressing the need to replace the existing building's aging and inefficient boiler. Using an integrative approach, the project team conducted an analysis showing that by installing new high performance windows, they could cut the capacity of a new boiler roughly in half; the savings in this boiler downsizing more than paid for the window replacement, so the project resulted in significantly reduced energy bills for the occupants with an extremely efficient HVAC system that cost less than a new building as well.

In this example, the charrette's integrative approach challenged deeply held assumptions, eventually leading to a better solution environmentally, economically, and aesthetically. Sitting down with all stakeholders to question their assumptions early in the process during the initial charrette was the key to successfully achieving the project's purpose and goals.

Since many of the ideas being addressed at Enterprise Green Communities charrettes may also challenge assumptions or fall outside of conventional practice, it is important to remember that questioning previously held assumptions and "rules of thumb" represents one of the most important aspects of a successful charrette. Accordingly, asking and encouraging questions that prompt team members to think about things differently is critical. As in the above example, rather than asking what would be the most efficient boiler for handling the building's heating loads, the team first asked, how can we reduce those heating loads? . . . then they selected the most

appropriate boiler after first addressing other interrelated systems that reduced overall first cost and operating cost.

These questions also help engage the participants and creates a focus on the qualities of success, identifies key issues associated with achieving that success, sets priority strategies to be implemented for alignment with the project's goals, and explores synergies between these strategies and how they can best be integrated. It is important to remember that one clear commonality that characterizes the most successful charrettes and projects is that the usual "right" answers were not simply assumed; rather, assumptions were questioned, and new answers were discovered through an interdisciplinary process.

5.5 Creating Alignment:

One of the primary functions of a charrette is to help project teams generate and decide on how to address the effects on social and environmental sustainability that the project will create; therefore, getting alignment around the team's and stakeholders' real aspirations is essential. If this does not occur, the design process may fall back to the default mode of repeating the patterns of conventional design. Consequently, charrettes serve as a key opportunity for building the team to function as a unified organism and to break down barriers between disciplines.

With the diversity of individuals usually present around any design charrette table, it is a given that we will have a diversity of values, opinions, expectations, and perspectives. This diversity can be either an asset or a liability, depending on how it is managed. Often, project success is impeded by lack of alignment around common purpose and a commonly understood process. When trying to introduce a new and unfamiliar way of thinking and designing, charrette facilitators can focus intentionally on helping clients and team members understand how and why the design process must be employed differently – and in an integrative way.

A charrette example:

A major developer wanted to build an urban high-rise residential building and achieve green building certification. Very early during the initial goal-setting charrette, which was attended by the entire design team and the owner's representatives, the owner and architect wanted to incorporate operable windows to allow natural ventilation during spring and fall swing seasons in order to significantly reduce energy consumption. The developer's energy specialist championed the idea with articles describing how other large buildings of this type had incorporated such strategies under similar climatic conditions. Later in the day, the idea was again embraced enthusiastically during the setting of performance targets—and, yet again, the team reinforced their desire to pursue this strategy during a discussion revolving around the LEED credit for controllability of thermal comfort systems.

All of a sudden, maybe because he realized that the team was really serious and committed to employing operable windows, the HVAC engineer slammed his hand on the table and exclaimed, "We are NOT using operable windows for a high-rise housing project on my watch!" His outburst was met with stunned silence. The charrette lost its energy and focus, and then devolved into a long recovery process that focused primarily on trying to convince the HVAC engineer that this approach was possible—without success. Unfortunately, after two hours of scrambling, the team's excitement about the idea deflated, and the idea was lost.

It was evident that this engineer was bringing different perspectives and expectations to the project that were not aligned with the team's goals and purpose. In short, even though the stated objective was to produce a green building, his primary concern was becoming vulnerable to any potential litigation related to installing operable windows in a high-rise building. While this was a legitimate concern, the team missed the opportunity to get this on the table right up front in the charrette and perhaps discuss the idea of indemnification. This concern could have been addressed throughout the day had the facilitator openly solicited each team member's aspirations more directly and explicitly. Instead, by the time the engineer's concern emerged, it trumped the team's alignment around an implicitly *assumed* and different purpose. Unfortunately, this concern was too deeply rooted and hence remained unresolved, resulting in the loss of a significant opportunity.

Armed with explicitly identified values and aspirations around which the team had aligned and committed, they likely would have had a much greater chance of discovering — or at least discussing — creative solutions that may have placated the engineer's concerns without busting the budget. This approach is called reconciling, or "harmonizing" conflict, and is discussed in the section 7.3 "Welcoming Conflict" below, under the "Role of the Facilitator" heading.

A more intentional means for creating alignment during charrettes and workshops is discussed in the Touchstone Exercise tools. A related issue regarding the need to provide time for reflection and feedback during the charrette is discussed in section 7.6 "Allowing Time for Reflection Time" below, under the "Role of the Facilitator" heading.

5.6 Fostering an Iterative Process: Using Progressive Approximation for Achieving Goals

An iterative process allows communication at every level, so that each team member's design decisions can be informed by an understanding of how their work relates to the whole. It is through iterations of developing understanding informed by other disciplines that we can create deeper alignment and help the team function collaboratively.

A charette example:

The civil engineer at a 50-unit affordable housing project in New Jersey had proposed a stormwater management system consisting of a dry well with concrete pipes and culverts, along with a septic system to meet local building codes. At the end of schematic design, two additional team members were brought into the project, one to address the restoration of soil and habitat and the other to explore alternative ways to treat human waste. For a few weeks, these two consultants did their research and analysis independently of the team.

At the next charrette they reported their findings. The soil percolation, it turned out, could be significantly improved by restoring the original character of the soil, before poor agricultural practice diminished its water recharge capability. On the issue of waste treatment, the waste specialist suggested replacing the approved septic system with a constructed wetland system that would clean the wastewater to drinking-water quality. At this meeting, it was suggested that the civil engineering infrastructure could be substantially reduced given these insights.

However, the engineer was not interested in changing his design, because these new ideas were unfamiliar and untested in the state. After three more meetings and review of suggested readings, the civil engineer still refused to change his original standard design. Finally, in

frustration at the next charrette, the Owner told the engineer to try designing the site's rainwater management without using any pipes, catch basins, or curbs.

A week later he came back with an excellent solution. Fifty percent of the infrastructure had been replaced with vegetated swales and rain gardens, taking into account the new habitat that was to be planted. The only pipes needed were for areas where the swales would have disturbed tree roots on one side of the road or the other and where water would have sheeted across the driveways in the winter and turned to ice.

Without the input from these other disciplines and the ultimate acceptance of these ideas by the civil engineer, the project might have been left with a more costly and less environmentally effective solution. Using natural systems in place of hard construction and honoring the way water "wants" to work is almost always the best choice.

Working across disciplines with all charrette participants and project team members is critical – through an interdisciplinary approach, opportunities for deeply integrating potential solutions at increasing levels of detail are made possible, and more effective solutions result. It is important to establish this pattern of iterative investigation – one that is aligned around the team's explicit objectives – during charrettes.

5. Preparing for the Charrette

Preparing for the charrette is essentially an exercise in understanding the questions, challenges, opportunities, and barriers that may exist for a given project (as all projects are different), and thinking through how to address these issues in a productive manner. This generally includes thinking about the invited attendees, the desired goals of a given session, and understanding the context of the project (local climate, site layout, political dynamics, etc). The more one understands about a project and its nuances, the easier it is to bring about the best possible results.

6.1 Logistics and Scheduling

Having a core planning committee to help outline logistics of the charrette, key attendees, etc. is helpful to ensure the charrette meets the goals of the project team. Depending on the size and scope of the charrette, an 8-hour time block is usually appropriate. Eight-hour charrettes may best be broken into 2 half-day periods to allow for further integration and a break for further reflection and informal discussion from one day to the next. It is helpful to have a single point person coordinating the charrette location and reservations, presenter coordination, AV requirements, RSVP, refreshments, etc.

6.2 Who Should Attend?

Core attendees may vary from project to project, but the usual suspects are the owner, design team (architecture, civil, MEP, landscape, structural), residents, technical consultants (e.g. senior housing experts, lighting designers), a utility representative, and operations and maintenance staff. The project team should also consider invite attendees from the departments of city planning, public works, the mayor's office, etc., particularly if there are elements of the public domain (such as PLDs in the Right of Way) that may be part of a proposed design scenario. In addition, the charrette can serve as a way to broker stakeholder engagement; that is, to engender buy-in from those in the

community. Potential stakeholders may include members of neighborhood organizations, resident councils, public officials, and even members of the press.

6.3 Agenda

The agenda will vary depending on the project scope and goal of the charrette, but should generally begin with an introduction and overview to the project, and then focus the first part on framing the issues (creating the 'problem space'), while the second portion of the charrette can focus on identifying potential solutions and next steps. One of the primary tasks of facilitators is time management, so constantly be aware of the day's time constraints and keep the team on track. Be sure to include a short break every two hours or so, as well as lunch if the workshop will go all day. Please see the attached Sample Agenda and Annotated Agenda for further guidance.

6.4 Visiting the Site

One important part of sustainable design is integrating the project into the place where it is located. Climate, soils, wind and sun patterns, existing neighbors, roads and transportation networks and the surrounding landscape and community will all influence—and be influenced by—the project. Therefore, it is important for all members of the team to spend time at the site getting to know it. Where time allows, this is best done as part of the charrette. For example, it could be done during one of the breaks, on the day before the charrette, or in the afternoon if the charrette can be broken into two 4-hour sessions on two consecutive mornings. At a minimum, all team members should be encouraged to walk the site prior to the charrette.

6.5 Collecting Background Information about the Project

The more information the facilitator, charrette coordinators, and project team know about the project, the better the facilitator can be at generating quality discussion among the group, highlighting key issues to consider, and asking key questions to engage the group. Key items that project team members should research and document for use at the charrette include:

- Environmental data: climate, watershed, soil, habitat, orientation, drainage, wind patterns, species of concern
- The site: location, neighbors, utilities and solid waste, transit connections, roads, open space, sun and shade
- The community: demographics, community needs, community concerns/sensitivities, resources
- Project statistics/program: reasons the project is being built, needs of residents, maintenance regimes, ownership structures, funding sources
- Preliminary analysis: Simple energy modeling, water balance, etc.
- Project timeline: critical deadlines, milestones
- Potential incentives: relevant utility, state or federal programs for energy or water (see www.dsireusa.org); specific requirements and application deadlines; potential grant programs

Integrative design means finding ways to work with all of the project parameters (rather than against them) to find sustainable solutions that meet the needs of the residents and community over time. Understanding these parameters in advance will help provide the team with the key

information needed for a successful project. Preliminary analysis, particularly of water and energy, can jump start the discussion of integrated solutions in a more substantial way.

6.6 Charrette Materials

Be prepared by ensuring that you will have:

- Your Enteprise Green Communities Integrative Design Charrette tools at the venue;
- a 'charrette box' of markers, pens, pencils, tracing paper, pins or tape for mounting sketches on the wall;
- flip charts;
- project maps and plans (large and small scale);
- sticky pads;
- rulers, etc. to allow for flexibility and various means of working through the tasks / questions and relaying information to the group.

Knowing in advance where materials are and when each will be needed can help the facilitator stay focused and the participants feel comfortable. Being prepared for all of the details will ensure that the charrette runs smoothly and efficiently.

6.7 Educational Presentation

For some projects, the level of team understanding and knowledge of integrative design and green building issues is advanced, and in other cases, the project teams are just getting started. For the first group, the introductory educational presentation may be limited to an overview of the project and any preliminary analysis or studies performed to date, along with any precedent research on similar building types or use of strategies (e.g. green roofs or solar thermal systems). For groups with a more beginning level of understanding, it will likely be useful to cover the basics of green affordable housing design. A brief overview of integrative design principles and strategies is likely useful for all groups either as a new concept or as a reminder that the integrative process is the key to achieving high building performance and sustainability goals cost effectively.

The template presentation provided with the Enterprise Green Communities Charrette Tools can be customized to fit your needs. This can be done by tailoring the presentation to address specific site issues, or adding background information on specific technologies and strategies of particular relevance. Background information on the site should also be added. Be sure to insert either a site plan and/or Google Earth image of your project, at a minimum, into the presentation where indicated.

6.8 Dealing with Groups of Different Sizes

The key to dealing with groups of different sizes is to get everyone involved and actively participating. It is important that all members of the charrette have an opportunity to share their thoughts and provide input. You will want to avoid members of the group participating passively as "audience members." With large groups, this generally means structuring breakout groups (usually between 5-8 people in size) with discussion points or exercises to prompt participation from all attendees. For smaller groups (under 12) breakout groups may not be necessary, but it will still be important to find a deliberate mechanism to solicit participation from everyone. It is the job of the facilitator to make sure that the group is collaborative and open, encouraging input from all participants, regardless of group size.

6. Role of the Facilitator

An effective charrette facilitator will add significant value to any charrette. Project teams without this expertise may want to consider hiring an experienced consultant from the Enterprise Green Communities Charrette Facilitator Registry.

7.1 Facilitation Skills

The facilitator is not the subject matter expert, but must be knowledgeable enough to guide the conversation to a productive end by inviting the skilled professionals in the room to bring forth their expertise and ideas. Accordingly, it is clear that implementing effective integrative design charrettes requires management, group facilitation, and moderator skills in order to execute activities effectively. Therefore, charrette facilitators may want to consider seeking management/facilitation guidance and/or training as part of their execution of this process, particularly with regard to developing the necessary organizational and leadership skills of the person(s) leading the team during the charrette.

The quality of any project team's focus and function is often a reflection of the leadership skills at the table, as opposed to just the implemented process alone. These skills for effective charrette facilitation include (among others):

- Ability to ask generative questions
- Ability to facilitate group dynamics by welcoming conflict
- Ability to delegate responsibilities to various "champions" on the team
- Ability to "essentialize" all key points
- Ability to allow time for reflection
- Ability to be flexible

7.2 Asking Generative Questions

The role of questions is discussed in section 5.4 "Questioning Assumptions: Enabling Creative Thought and Synergistic Problem Solving" above. A good rule of thumb to remember is that a good facilitator asks more questions than he/she gives answers.

7.3 Welcoming conflict

Expect conflicts to arise. Welcome them – they are opportunities for discovering creative solutions in a way that effectively manages group dynamics. There are two options when teams are faced with making decisions about seemingly conflicting issues:

When we compromise, we may "concede." This means we could lose ground on each issue and lose sight of a reasonably positive outcome. Example: replace single-glazed windows in a house with double-glazed windows. The windows cost more and the energy payback is minimal – maybe 30 years. In other words, lose-lose.

When we reconcile conflicting priorities, we are "harmonizing" both sides of the issue. Example: replace the single-glazed windows with triple-glazed, argon filled, low emissivity windows. The seemingly expensive windows allow significant reductions in ductwork due to eliminating the need for perimeter heating and a major downsizing of the boiler. This option allows for a total

reduction of capital costs as a whole compared to purchasing the less expensive double-glazed windows, and the energy savings is high enough each month to be meaningful to the owner, while associated environmental impacts are reduced. This is a win-win-win situation.

7.4 Delegating responsibilities to various "champions"

Since facilitators are not subject matter experts in all disciplines, it is critical to use the expertise in the room to bring forth ideas and reach consensus. Also, since the charrette is only one component of a larger process of design and development over the life of the project, seek to identify "champions" for various issues, including volunteers for "leading the charge" and implementing specific design and building objectives. Additionally, to help make sure that the touchstones and environmental objectives identified at the charrette do not get lost in the intensity of the design, construction, and operation process, it is useful to have "champions," based on their discipline, assigned to issues they particularly care about or for which their discipline is logically responsible. This concept is particularly useful in assigning responsibilities for meeting the Enterprise Green Communities Criteria. Therefore, an effective outcome of the charrette is the assignment of a "champion" for each criterion that the team is pursuing.

7.5 Essentializing Key Points

In order to provide a useful charrette report that project team members can use moving forward, it is important to record key ideas, decisions, and next steps during the charrette. Flip charts are an effective way of accomplishing this. However, only the essential issues, conclusions, and outstanding questions need to be recorded – not every word or idea. Consequently, an effective facilitator knows when to allow discussions to proceed until conclusions are reached (or it is clear that conclusions cannot be reached and further analysis will be required) before "scribing" the essential points. In order to ensure accuracy when recording such results, it is useful to ask frequently: "Did I capture that correctly?"

7.6 Allowing Time for Reflection

Provide time for reflection and feedback from the project team members during the charrette in order to ensure that all key decision makers are involved in the process of establishing goals and project direction. This will avoid decisions reached at the charrette from backfiring due to lack of critical support or buy-in. By setting intentional reflection time and feedback loops that invite participants to pause and reflect upon how the meeting is progressing, the facilitator can help eliminate such problems. This can take the form, for example, of asking the development owner's team to meet during lunch to discuss the findings of the team thus far and to report back to the group as a means of kicking off the afternoon. This has the added advantage of giving people – some of whom may feel uncomfortable sharing their thoughts in the larger group format – a voice within the comfort of a smaller group, leading to more casual conversation with their coworkers. Another form this strategy can take can be as simple as pausing – for five or ten minutes at a logical break point in conversation or at a major transition – to ask everyone to reflect on what they are experiencing through this charrette process.

7.7 Being Flexible

It is important to note that the charrette agenda is just a guide, and the sample agenda provided in this Charrette Tools package will need to be tailored to the specific parameters of each project. However, time management is always an issue, so the final agenda needs to remain fluid and flexible during the charrette. It should allow for change in response to the degree of progress made

at each step in the day. A good rule of thumb to remember is to "follow the energy in the room".

7. Role of the Facilitator's Assistant

Between leading the charrette, providing education, encouraging dialogue, actively listening to and synthesizing the contributions of all team members, and recording responses, the facilitator clearly has a lot to do. Charrettes work best when the facilitator can count on an assistant to make things run smoothly. That assistant may be someone from the facilitator's own firm or someone else from the team. The assistant should be assigned in advance and should work with the facilitator to review the preparation checklist and all of the materials that will be needed throughout the process.

The Enterprise Green Communities Integrative Design Charrette agenda is an ambitious one. A good assistant that is well versed in green building and the Green Communities Criteria should ideally be on hand to record the Touchstones Exercise response, take notes throughout the day on proposed strategies, and populate the Green Communities Criteria Checklist. They should serve as timekeeper and make sure materials are on hand as the facilitator needs them. They can also be available to guide individual groups during the breakout sessions and to help assemble meeting minutes. This support is the best way to ensure that the charrette covers all of the bases and ends on time.

The facilitator and the facilitator's assistant should plan on meeting before the charrette to review roles and responsibilities, logistics and other details.

8. Charrette Deliverables and Next Steps

Keeping in mind that the charrette is really the launching of an on-going integrative design process, rather than a one-time event, the charrette deliverables should serve as documents to help support the project on its way.

9.1 Required Deliverables for the Green Communities Charrette Grant (when applicable)

If the charrette team received an Enterprise Green Communities Charrette Grant, the team is required to prepare and submit several deliverables. Some of these documents will be prepared before or during the charrette, while others may need to be completed as a follow-up step. These documents include:

- A copy of the agenda, attendee list and meeting notes of the charrette
- The Green Development Plan
- A Grant Disbursement Request document provided within the Grant Agreement signed by an authorized representative of the organization

The agenda and attendee list should be developed prior to the event. Meeting notes should be taken by the facilitator's assistant or other designated member of the group, and then finalized after the charrette.

The Green Development Plan is a template Excel document provided by Enterprise and available on the Green Communities website. It is also a part of this toolkit, along with annotated notes for the facilitator to consider for each criterion.

The Green Development Plan includes a title page, on which the project team must fill out:

- A description of the process that was used to select the green building strategies, systems and materials that will be incorporated into the project
- A statement of the overall green development goals of the project and the expected intended outcomes from addressing those goals
- The names and roles of the design and development team members

It also includes a version of the Green Communities Criteria and requires that for each mandatory criterion, and for each selected optional criterion, the team is asked to provide:

- The name and role of the assigned champion
- The strategies that will be used to meet the targets
- A description of follow-up measures needed throughout completion of design, permitting, construction and operation in order for the criterion to be met

In some cases all of the information required for the Green Development Plan will be collected during the charrette. In others, it may require a follow up meeting to complete the matrices. This meeting should happen as soon after the charrette as possible, while the information is still fresh in everyone's minds.

9.2 Next Steps—The Sustainability Roadmap

The required deliverables provide a good basis for summarizing the work that was done during the charrette and the additional steps required to achieve the Enterprise Green Communities Criteria. In order to implement a successful integrative design process—and a successful sustainable project—the project needs a roadmap for implementation.

A Sustainability Roadmap should serve as a step-by-step guide for the integrative design process and achievement of the goals and principles identified during the charrette. It should include not only the strategies to be pursued and the associated champions, but also a communication plan; a schedule for the various types of meetings, coordination sessions and charrettes; the types of additional analyses and investigations required to support informed decision making; and the types of document reviews, inspections and quality control mechanisms to ensure that the goals are being met.

Note that this list includes the timing of additional charrettes. Charrettes are useful tools for integrative design not only at the beginning of a project but also throughout. They can be scheduled any time there is a need for interdisciplinary integration, problem solving and creativity. Targeted charrettes can be programmed into the Sustainability Roadmap for specific sets of strategies, for example, charrettes focusing on water or energy, building site or envelope, indoor air quality or daylight. Charrettes can also be used as the project delves into deeper levels of detail or as new phases are started. These additional charrettes may involve reconvening the entire team, or may require a subset of the team to deal with specific issues.

The energy and enthusiasm generated at the design charrette does not need to dissipate as the project progresses. It should be re-harnessed periodically to enable the highest potential of fully integrative teams and project.

9.3 Wrapping Up

By the end of the charrette, participants are likely to feel tired—not to mention the facilitator! But before everyone leaves, it is important to capture and restate the important work that was accomplished, and to set the stage for next steps. Hopefully, the day yielded:

- Alignment around a set of project sustainability goals
- Alignment around a set of strategies to be pursued or investigated
- An overall project sustainability champion and specific champions for each strategy
- A preliminary Green Development Plan

Often, additional work will need to be done to complete the Green Development Plan or flesh out specific strategies. Therefore, a timeline for completing these activities needs to be established. Key deadlines for the immediate next steps should be established, as well as a target date when the group can reconvene. Beyond these immediate next steps, a longer term plan will be needed to ensure the goals are achieved throughout design, construction and occupancy, as described above.

It is important for the group to understand what is going to happen to the results of the day, and that the exercise was not just theoretical. The development and overseeing of that longer term plan and management of the Sustainability Roadmap should be clearly assigned to the overall project sustainability champion. Completion of the required documentation for the Enterprise Green Communities Charrette Grant should also be assigned. Closing remarks for the day should allow participants to reflect on what they have accomplished and on the journey ahead. These remarks should be brief but should encourage and ideally inspire the team to stay the course for a successful project.