



**Connecting with Green Building A&E Practitioners & NGOs
&
Developing guidelines for greening faith buildings
December 17, 2007 Final Report
for Faith & the Common Good
by Sustainable Alternatives Consulting Inc.**

Project Goals

The goals of this project at the outset were:

- 1) Establish contact with key people and organizations in the building Industry who are working with, or have the potential to work on new construction and major renovations for the faith sector, and who are 'green' (e.g., Leadership in Energy & Environmental Design - LEED - accredited practitioners, those promoting energy efficiencies, etc.)
The organizations to be contacted were:
 - 8 Architectural and Engineering practitioners
 - 2 Industry Associations - Canada Green Building Council (CaGBC) and the CaGBC Greater Toronto Chapter
- 2) Present the above organizations with information about the GSS program of FCG
- 3) Gather information about the CaGBC's goals with respect to faith buildings (including new construction and major renovations as well as retrofits).
- 4) Assess the extent of interest, capability and focus of potential collaboration and support for the GSS program with respect to new construction and major renovations (in addition to assessing the CaGBC's feasibility of collaboration vis-à-vis retrofits as noted above).
- 5) Develop a list of green A&E companies and individuals (in and around the GTA) that will not be contacted as a part of this contract, but which would be used for reference purposes by FCG.

Methodology

A summary was created of the FCG GSS program for practitioners (see **Appendix I**.)

Contacts were made with 11 architect and engineering firms (noted as 'practitioners' within the report); the Canada Green Building Council (CaGBC); and the organization's Greater Toronto Chapter. Of the practitioner firms, one declined to participate due to capacity; two expressed interest initially but did not respond later on; and one firm had been referred as a key interested resource, but did not respond at all. The remaining seven expressed great interest in being on FCG's preferred list of green practitioners (Please see **Appendix II** for the summary and contact info).

Both the CaGBC and the Greater Toronto Chapter expressed interest in collaborating with FCG.

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While many practitioners responded early, it much longer to connect with key representatives of the NGOs due to their schedules (the CaGBC is undergoing a major expansion), although they clearly were interested in dialogue. Eventually, the CaGBC became fully engaged in discussions with FCG via the consultant and directly in a meeting, and in fact has made considerable changes within their expansion planning, that are specifically aimed toward supporting FCG's and the faith communities' goals. Additionally, the CaGBC's Greater Toronto Chapter had expressed interest in potentially supporting FCG (i.e. upon FCG's request they would consider drafting an RFP for the guidelines development work).

Given that a key GSS initiative was to be the development of green standards for faith communities' building, the consultant used the remainder of the contracted time toward engaging the practitioners and the CaGBC in initiating this process.

A **survey** was conducted to:

- a) gauge practitioners' experience with faith building projects.
- b) learn how practitioners envisioned the process of green standards development.
- c) see whether immediate preferences existed for building performance valuation systems (which would be means of assessing the validity of the standards, and potentially the framework for the standards themselves).
- d) obtain practitioners' feedback on potential collaboration opportunities for FCG.

The survey and a summary of responses are presented in **Appendices III and IV**.

At this point it seemed appropriate to gather the practitioners and faith community stakeholders in a meeting/teleconference. This was key to introducing the practitioners to FCG, and to formalizing the development process of green standards for faith buildings. (Note that the 'standards' gradually evolved into 'guidelines,' as described later in this report.)

The **meeting goals, issues and outcomes** as regards the consultant's project are presented on the following pages. Attendees are listed in **Appendix V**.

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December 7, 2007 Meeting

The goals of the meeting were to determine a process for, and commence a dialogue among interested parties toward developing green building standards or guidelines for faith buildings' new construction and major renovations.

1.0 Key issues

1.1. Types of faith buildings

Faith building types include primarily: **assembly buildings** (e.g. churches, synagogues, temples). Other forms include manses i.e. single family (sf) dwellings; education; multi-unit residential buildings (MURBs); care facilities; head offices; regional offices; and summer camps.

1.2. Standards vs guidelines

Initially, several faith communities had been focused on developing green building *standards*, and in having the performance valuation system be LEED. Since a LEED standard would require that buildings be certified, given the current costs for certification could be a barrier it was recommended that for the purposes of the immediate discussions, the faith communities consider guidelines for greening faith buildings, not standards.

1.3. New Construction/Major Renovations/Retrofits

Upon consultation with the practitioners, since there seemed to be a good deal of overlap between issues they experienced when conducting **major renovations** and **retrofits**, the consultant expanded the discussion on Friday, December 7 to encompass **new construction, major renovations and retrofits - the latter in particular for the purpose of determining optimal methods of reducing energy consumption - which would depend on building type & subtype e.g. size, architecture, components, usage and age.**

1.4. Assembly buildings & LEED® Canada building valuation system

The focus for the first meeting with practitioners and faith communities was **assembly buildings** since:

- a) by far, the **assembly type comprises the greater proportion of faith buildings** (24,000 out of 30,000). Key issues arising from looking at this building type also may inform the tactics for addressing the other types.
- b) **given some faith communities had been seriously considering LEED® Canada as a valuation system, and given the need for benchmarking performance, there were some challenges that needed to be considered at the outset of this work:**
 - a. the LEED® Complete process to expand LEED® Canada had - at project outset - precluded testing existing **assembly buildings** for benchmarks in **pilots** during Phases I and II through mid-2009 (while other faith building types were included in the benchmarking process). **Upon consultation with the CaGBC's President in this regard, he had advised the**

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- consultant that assembly buildings *could* be included in the Phase II pilots, given support from faith communities.
- b. buildings older than 1980 were originally not to be included in pilots.
 - c. the practitioners consulted had noted that there are significantly different faith assembly buildings - which suggested it would be appropriate to **aggregate** the assembly buildings into **subtypes** e.g. by age, size, type of use, time of use (24/7 vs stoking fire once/week), and architecture. This too was a challenge upon first discussions with the CaGBC, since initially for the pilots, it was deemed optimal to have a greater congruency among the buildings that would be benchmarked.
 - d. **Costs would vary for conducting the pilots.** The first building in a type would incur the largest fee, with decreasing costs thereafter. However, **faith communities would then also need to pay for the actual measures** that may arise from the pilot work, related to recommendations for improving building performance.
 - e. If the faith communities and practitioners wanted to have a green building **standard** that would be evaluated via LEED (as had been indicated at the outset of this project), then achieving the standard would require **certification**, and current certification costs for smaller buildings, as noted by Enermodal Engineering are approximately equal to a 2% increment to conventional costs, or one-third of the greening increment for achieving LEED certification (moving to about 1/10 of the greening increment for larger projects). For poorer congregations, this cost could be a challenge. The consultant noted that **according to the CaGBC, certification costs are expected to be reduced dramatically over time due to the distributed nature of the planned expansion of LEED® Canada.** With the news that assembly buildings could be included early on in the benchmarking pilots, this would allow faith buildings to achieve lower-cost certifications, sooner.

Since the greater proportion of faith buildings are the assembly type, and many are older than 1980, these five factors that were part of the initial scenario for pilots represented a challenge for practitioners who would be conducting new construction or major renovations if the LEED® Canada valuation system was selected.

1.5. Potential mutual benefit if FCG were to become a member of CaGBC's LEED® Canada distributed network

It should be noted at this point that a potential additional value to FCG to having LEED as the valuation system may be the organization having a role within CaGBC's eventual distributed network of 'LEED organizations,' in accordance with the 'hub' role that FCG is considering having within faith communities. *Currently this is an entirely hypothetical value: even if FCG decided to use LEED® Canada as a valuation system for green faith buildings, achievement of this additional role would be dependent on the CaGBC's plans.*

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2.0 Meeting discussion outcomes

The faith community members confirmed some current challenges with their buildings, and identified additional issues to be addressed.

2.1. Building age: older buildings are key

Denis Schmiegelow of the Coalition of Church Leaders of Ontario noted that it was a given that new construction would be green; what was key was the predominance of older buildings. In fact, only 2% of buildings are new in the faith communities among members of the Coalition.

Brian Mills stated that most of the Anglican Diocese of Toronto's buildings are older than 20-30 years, and they are the ones most needing attention. On the other hand, Michelle Hogman of the United Church of Canada observed that many of her faith community's buildings were constructed after 1984.

2.2. Differing methods of addressing the worst performing buildings: heritage vs commercial value

There is a difference among faiths e.g. Anglican and United Church, in regards to what can be done with buildings that are the worst performers. Where a building is performing poorly, and its potential for performance improvements are sub-optimal, one faith may be interested in demolishing and rebuilding (United Church of Canada).

However, the Anglican Diocese of Toronto has a historical preservation mandate, and can't demolish old buildings; rather what's needed from their perspective is best practices to achieve optimal performance, perhaps laid out in an online format.

Additionally, Michelle Hogman stated that for financial reasons, the United Church of Canada's congregations may be interested in selling property with an old chapel to generate the funds for new construction; one community simply relocated their assembly to a mall.

2.3. Building numbers

The Ontario Coalition of Churches is seeking a one-stop-shop to help facilitate the greening of their 4,500 churches.

2.4. Eco-spirituality as the basis for green guidelines development

Rather than developing the guidelines using a building valuation system (e.g. LEED® Canada) as a springboard with modifications based on faith communities' values (a method used to develop green guidelines for healthcare construction in the U.S.), the meeting consensus was to **base the guidelines *a priori* from the community's eco-spiritual, theological perspectives, apply them to buildings, and from this work it would be determined which valuation system(s) would be optimal.** This is in alignment with the consideration that all faith communities that are partners of FCG see their beliefs and activities relative to the environment, and are committed to this view.

Questions and comments were raised as to how faith communities would live out their values, and what objectives they aspired to in their buildings (which would impact

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performance goals, building services needed, and ultimately, capital and operations costs for achieving compliance with green guidelines). Some examples follow, with italicized questions, analyses and potential impacts (identified subsequent to the meeting by the consultant and by practitioners) that may help inform the discussions about eco-spiritual values, and manifesting these values in buildings and lifestyles:

- To what degree does simplicity play a role in faith communities' green goals? E.g. not just using design or equipment measures to achieve optimal climate control - but behavioural changes like putting on layers. E.g. heating only the sanctuaries. A further comment was that to base guidelines on LEED means a major focus would be on using technology rather than potentially simpler, behavioural-change solutions that go beyond passive measures.
 - *Adding layers may be an age-dependent measure: older members may be unable to carry the weight of additional layers of clothing, and may be more susceptible to or have longer-lasting effects of cold, damp and drafts.*
- To what degree is a faith community's building important to its members as their place of assembly for worship?
 - *What is a congregation: its people, or its people in a building?*
 - *Is there significance to the place where a congregation worships?*
 - *Do some faiths believe that value systems which are attached to a place of assembly need to be congruent with the value systems of the assembly?*
 - *Some faith communities/members may feel that the buildings in which people have prayed gain additional value.*
 - *How might faith communities reconcile differing views on these topics within a congregation in the context of eco-spiritual goals?*
 - *Might a 'triage' approach be appropriate in certain circumstances, to 'cull' i.e. demolish the poorest-performing buildings? If so, when?*
 - *To inform this discussion, should surveys be conducted after a faith building has been greened, or a congregation moved to a greener site, to see if the improvements increased post-greening attendance, and why? (Green buildings have enhanced attendance in other sectors).*
- While there was a comfort level expressed with the concept of FCG's light, medium and dark green system, questions were raised regarding how eco-spiritual goals would be classified into performance levels.
 - *Will the classification be dependent on environmental impact?*
 - *What does each classification mean? What is a good/bad project?*
 - *There is a concern about the need for agreement on this: for example, where environmental performance is 'bad' but the sacred space is 'good', or where there is a green building with poor sacred space.*

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- There were differing opinions as to whether it is appropriate sometimes to retain 'leakiness' in stone walls vs ensuring an air-tight space, in order to accommodate air quality needs, and for example, so leading on windows doesn't melt.
 - *Another item related to air quality not mentioned in the meeting, is the value given to incense and scents in relation to the value placed on other congregational members' respiratory challenges.*
- A faith community in BC that was advocating against clear-cutting was able to maintain integrity in this challenge, as they had made prior commitments to greening their lifestyles in recognition of concerns about climate change.
- The focus of St. Gabriel's design was from an eco-theological, cosmological perspective that was discussed among the congregation, and the LEED valuation system with third party verification was a method of assuring that the project 'walked the talk,' achieving credibility in that regard.
- How are faith communities' plans changing in relation to congregations' needs, given the demographics and dynamics, such as aging members, poorer congregations, lower representation among youth. Many faith communities offer a range of community amenities - which impacts the need for building heating, lighting, ventilation and air conditioning services, but also lowers costs to the community.
- Are faith communities considering as part of strategic planning, the opportunity their buildings may pose in times of climate change adaptation - such as community gardens to address needs for food security, and refuge in a serviced building.¹
- Transferability of the guidelines into people's lifestyles and workplaces.

This work may be a key component provided by the Green Guidelines for Faith Communities that distinguishes the sector from others in the green building industry, and provide an enriched concept of sustainable buildings from a spiritual perspective.

2.5. Process and product needs for guidelines development and evaluating buildings from an eco-spiritual perspective.

The following are some of the associated products and processes that would need to be developed. Some were discussed within the meeting. Others are included as reference points impacting FCG's and the faith communities' strategic, budget and funding planning.

2.5.1. Recommended process needs: workshops; developing eco-spiritual evaluation system and determining building evaluation system; research and additional action:

¹ Rosie Hyde had noted previously that a project's renewables grant application's success was largely due to their refuge rationale.

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2.5.1.1. Workshops to develop the eco-spiritual variables and then vest them in buildings. Given the complexity of the issues and to facilitate planning, discussions after the Dec 7 meeting suggest the events may require more time to develop. The scenario, expanded over longer time looks like this:

- 1) A **Feb/08 planning meeting to plan a larger multi-day workshop with national participation on visioning the eco-spiritual variables, to determine:**
 - Who should be at the large event
 - Sectoral representatives within faith and green building communities, as well as congregations
 - National and international exemplar representatives (e.g. from the US and UK)
 - Topics, modes of engagement
 - Methods of delivering on workshop outcomes
- 2) The large **multi-day workshop to envision eco-spiritual variables** (held in the new budget year). Potentially in June/08.
- 3) A subsequent **green building guidelines workshop to begin the vesting of eco-spiritual variables within faith communities' edifices**. Potentially in Sept/08.
- 4) Continuation of the guidelines development via e.g. online web forum and potentially additional meeting(s).

2.5.1.2. Development of an eco-spiritual evaluation system

To illustrate, it may be that about 20 eco-spiritual variables arise from the workshop that are common to all faiths, and another 10-15 other variables arise which are common to some faiths and not others. An evaluation system would then seek to quantify these variables (see Research below).

2.5.1.3. At some point, there would be an **analysis and group discussion** to determine what **building performance valuation system** would be appropriate.

In this regard, during the Dec 7 meeting it became apparent that the LEED® Canada pilot scope had been significantly expanded further by CaGBC to accommodate faith communities:

Given LEED® Canada may be the building performance evaluation system decided on for faith communities' buildings, and the recent inclusion of assembly buildings in Phase II pilots with demonstrated faith community support, CaGBC representative Gillian Henderson also noted the following new pilot features:

- **Buildings older than 1980 can now be included in pilots.** Faith communities would decide which buildings would be most appropriate.

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- Faith communities would have the flexibility to choose several subtypes for pilots.
- Pilot costs would be expected to be lower for Phase II participants than for Phase I (due to the learning curve).

Additionally, LEED® Canada will include metrics that address Life Cycle Analysis and occupant health indicators.

2.5.1.4. It would be important to carry out specific research studies:

Prior to the planning meeting for the eco-spiritual workshop:

- a. Determine which faith communities would be interested in being included in the guidelines development.
- b. Obtain broad-based information on building subtypes within interested faith communities (not a detailed survey at this point)

Prior to the multi-day eco-spiritual workshop:

- c. Conduct a survey of these faith communities to segment their buildings by type, subtype and ownership.
 - *Based on work in the Pacific Northwest² not all faith buildings are owned by the faith communities occupying them. Identifying building ownership (e.g. by community, by diocese, by others) would help determine optimal strategies and measures*
- d. Conduct a survey to learn what has motivated congregations toward environmental stewardship, e.g. composting, community gardens.
- e. Conduct a survey to determine where volunteer energy is vested within faith communities, and key motivators - with a view to replication.
- f. Determine which faith communities need what resources from FCG, such as a one-stop-shop: to help inform FCG's expanding role.
- g. Enhance the existing FCG building survey for heightened identification of targets as 'low hanging fruit' for retrofit purposes.
- h. Aggregate buildings into subtypes
- i. Conduct performance evaluations of the subtypes as determined via current costs (see Energy Label for Churches).³

² Reference from Rosie Hyde: <http://www.nwalliance.org/research/reports/125.pdf>

³ By Rosie Hyde for the Anglican Diocese of New Westminster, BC.

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- j. Identify green building exemplars from the aggregated subtypes, and develop case studies.
 - o *Key gaps in current case study formats include the context for decisions - in favour or against scenarios. Examples: several products were considered; the decision was in favour of x instead of y or z because of budget constraints, or operational ease, or (other factors).*
- k. Research evidence-based findings in the health and faith sectors' in the U.S., for indications of particular building features that may contribute to enhanced health and e.g. to transcendence from the self.⁴

Prior to the green building guidelines workshop/forum process:

- l. Define metrics that assess performance on the eco-spiritual variables that could not be addressed within existing building valuation system(s).
- m. Conduct in-depth building performance evaluations as needed and determine optimal solutions to enhance performance of building sub-types. Potential methods follow (note the timing and the content of subtype aggregate profiles may determine which buildings are assessed in the short-term and which benchmarked over a longer-term process):
 - LEED Canada pilots (commencing 1Q2009)
 - Analyses by engineering firm where cost-effective
 - For buildings that may be low-performers or with poorer congregations (i.e. not suitable for pilot work), collaborating with an ENGO for these subtypes.
- n. Mine the US guidelines for healthcare for info transfer.
- o. Determine barriers to implementation and develop methods to address them: for instance, one audit out of 28 conducted in BC in 2006 has led to retrofit implementation. There are indications this was in part due to lack of funding availability.
- p. Identify potential funding opportunities and partners.
- q. Identify key decision-making points that will be process outcomes, e.g.:
 - i. when do individual congregations call in a consultant, e.g. engineering firm.

⁴ Not in the religious sense, but: to go beyond material experience, to seek outside oneself for life's meaning and purpose

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- ii. If the light-green, medium- green, dark-green system that FCG currently has is continued, what measures would signify stages and transitions.

2.5.2. Recommended products

Some of these needs were discussed in the process section above: an evaluation system for eco-spiritual variables, and selection of a green building valuation system. Additionally, the following would be required:

2.5.2.1 Reference Package

A comprehensive reference package series would ideally be developed for faith building types and homes, *for all faith building types' New Construction/Major Renovations/Retrofits; and later, for other stages of these buildings' lifecycles.*

A LEED® Canada reference package includes: the project checklist and for Prerequisites and Credits: Green Building Concerns, Environmental/Economic/Community issues, Design Approach (Strategies, Technologies, Synergies & Trade-offs), Calculations, Resources, Definitions, Case Studies, Intent, Requirements, Submittals, Referenced Standards, Interpretations and Regional Variations.

One synergy of having LEED® Canada as the building valuation system can be seen via the new comprehensive 'bookshelf' system the CaGBC is developing to address all building types and lifecycle stages, which could lead to a collaboration to include faith buildings as they manifest Eco-Spiritual issues.

2.5.2.2. Maintenance

A component of achieving LEED® Canada goals for a project is the creation of a **maintenance manual** and **training maintenance staff**. This would be a key feature of FCG's work, as well as e.g. developing briefs on public education methods to achieve behavioural changes such as getting people to switch off lights.

2.5.2.3. Database

Some preliminary considerations around data management follow:

- If an energy label format was used (per the one derived for the Anglican diocese of New Westminster by R. Hyde, discussed previously), presumably the repository of the data would be online.
- If FCG was the data repository for this work, it would enable comparisons of energy label information. For such data to be useful, qualitative subtype features would also need to be included (see descriptions of case studies described in the next, research section of this report).
- There should be discussions prior to the organization of this data in relation to dovetailing with building performance valuation system and eco-spiritual performance data that would eventually be obtained. Topics include:
 - Data repositories (at FCG? By the building valuation system?). Where would eco-spiritual variables' and building subtypes'

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qualitative data be stored? Ideally, with the quantitative data for full reporting.

- Redundancies
- Maintaining data integrity given different valuers and access points
- Data-sharing: access to data downloads and for uploading changes.

2.5.2.4. Simulation software tools

It has been suggested that if the faith communities would be working to enhance their understanding of buildings, a simulation tool would be needed. This tool would also assist communities that are highly motivated toward continuous improvement to shave energy consumption and GHG emissions.

FCG currently uses RETScreen (which gives monthly data). Hourly data offer higher-level efficiency; other tools mentioned by practitioners were EE4, EnergyPlus and Equest. It may be useful for FCG to engage in a discussion with practitioners regarding these tools.

2.6 Financing and funding alternatives

2.6.1. Funding energy efficiency improvements/renewables

- Via transferring the capital costs to an investment vehicle for:
 - a) external investors, or
 - b) to bypass the capital/operations divide by having the capital budget invest in the venture, with the operations budget payments (lower than the savings) going to the capital side.

2.6.2. Revolving loan fund: Harvard University had a successful rlf for building greening.

2.6.3. Associating with an ENGO to engage in assessing optimal measures to increase performance in specific building subtypes that may be harder to address due to e.g. age/small size of building/congregation/funds available.

2.6.4. Local Improvement Charges: costs for energy efficiency/renewables are attached to property, not to owner. Given caution is required to avoid raising spectres of property and income taxes, this method potentially could be done fairly independently of governments - except that the LICs are typically a municipal measure. The consultant has discussed financing arrangements of this type with a credit product developer. He suggests these could be developed into products and proliferated to credit unions across Canada.

2.6.5. The NRCan ecoEnergy Retrofit grant program building size is suitable for churches, however faith communities' needed process length (given volunteer committees and layers of accountability) may preclude successful applications. With statements of interest from faith communities, a team

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could approach NRCan and collaborate with them to develop an accessible funding program for faith communities.⁵

2.6.6. The NRCan building labelling program

FCG will be having exploratory discussions about this program with NRCan.

2.7. Recommended additional collaborations

Given the following:

- 1. green practitioners have expressed concerns about the dearth of green contractors*
- 2. many faith communities support the development of social capital*

... it is recommended that FCG:

- 1. facilitate connections to green contractors and green trades*
- 2. consider creating a Canadian offshoot of the U.S. "Apollo Alliance"⁶ to help facilitate the inclusion of at-risk communities in the growing economy dedicated to greening buildings. These include people segmented by:
 - a. age (50+, youth)*
 - b. gender (incl. single parents)*
 - c. ethnoracial background (including newcomers educated abroad in the building professions/trades but without Cdn accreditation or experience)*
 - d. transition from downsized manufacturing industries**

These connections would contribute to local economic development, and this work may therefore be supported by funders such as foundations and government agencies.

⁵ Rosie Hyde & Sonja Persram would be willing to support this. See:

<http://www.oee.nrcan.gc.ca/commercial/financial-assistance/existing/retrofits/forms.cfm?attr=20>

⁶ http://www.apolloalliance.org/about_board.php,
http://www.apolloalliance.org/about_endorsers.php#3

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Conclusion

The consultant achieved - and substantially surpassed the project's goals. Key practitioners have been mobilized as preferred green architect and engineering organizations for faith communities, and introduced to FCG. They and the Canada Green Building Council are very supportive of FCG's work. These groups collectively have given much thought to, and contributed considerable time and experience toward identifying the stages and process for developing green guidelines for faith buildings (practitioners), and toward providing solutions to FCG's and faith communities' needs of valuation systems (CaGBC).

Additional practitioners are listed in **Appendix VI**.

Recommendations

In addition to the process, product and collaboration recommendations arising from the meeting, the consultant adds the following:

Practitioner Compensation

Beyond an additional meeting, the practitioners' professional expertise will be drawn on substantively during the guidelines development process. Given their multiple responsibilities within their own firms, it is highly recommended that they be financially compensated moving forward.

Roles

It is recommended that several distinct roles be funded to enable the guidelines' development:

- **Facilitator of eco-spiritual guidelines development**
This individual is steeped in theology and understands issues cross-cutting multiple faiths
- **Facilitator of workshop(s) vesting eco-spiritual values in green buildings**
This individual has a strong theological as well as a green building background as a practitioner (architect and/or engineer). One practitioner who has been involved at a senior level in an inter-faith organization noted that this kind of facilitation may require someone with both an architecture *and* an engineering background, and in fact may also have strong construction project management experience.
- **Green building research liaison**
This individual would be a technical liaison, a subject content expert on green buildings who:
 - assists the eco-spiritual session facilitator via identifying incongruencies between spiritual values and green buildings
 - informs much of the research studies in liaison with the GSS coordinator; analyses and reports on results
 - conducts external studies
- **Project manager for the guidelines development overall**