# NIREL NATIONAL RENEWABLE ENERGY LABORATORY 1617 Cole Blvd. Golden, CO 80401-3393

Solicitation No. RFJ-8-77550 Request for Proposal	Amendment No. 06		Date: March 11, 2008
ISSUED BY: National Renewable Energy Laboratory 1617 Cole Blvd. Golden, CO 80401-3393		PROJECT NAME & LOCATION Design/Build Subcontract for the Research Support Facility Golden, CO	
The above numbered solicitation is amended as set forth below. The hour and date specified for receipt of offers         [X] is not extended and remains 4 p.m. MDT, 3/27/08.       [] is hereby			
FAILURE TO ACKNOWLEDGE THIS AMENDMENT MAY RESULT IN REJECTION OF YOUR OFFER. EXCEPT AS PROVIDED HEREIN, ALL TERMS AND CONDITIONS OF THE SOLICITATION DOCUMENT REMAIN UNCHANGED AND IN FULL FORCE AND EFFECT.			
Subcontract Administrator: Karen Leitner			

This Amendment No. 6 to the Request for Proposal, RFJ-8-77550, is being issued to: 1) incorporate Quality Assurance into Appendix A – Conceptual Documents, Part 1 – Procedures; 2) Provide information on the Site Environmental Assessment; 3) Provide RSF Energy Target Definitions, dated 3/10/08, Revision 3; and 4) to answer questions received to date for the design-build RFP for the RSF.

Incorporate the following information titled Quality Assurance into the RFP, Appendix A – Conceptual Documents, Part 1 – Procedures:

# Quality Assurance

- The Owners Representative shall prepare a formal Quality Assurance Plan that shall be submitted to NREL for approval prior to the start of design. The Owners Representative shall utilize the plan and defined processes and procedures to meet the project objectives and guard NREL against errors and omissions in design, as well as defects in material, equipment, and workmanship during construction. At a minimum, the Quality Assurance Plan shall addresses the following:
  - a) Criteria used for applying a graded approach to quality assurance and quality control activities during design and construction;
  - Process for evaluating whether all architectural and engineering designs are consistent and interconnected between the various disciplines and subcontractors;
  - c) A list of the quality control checkpoints and criteria
  - d) Design review, approval, and submittal processes and authorities;
  - e) Design development and evaluation checklists;
  - f) Processes for reviewing, inspecting, testing, and accepting construction;
  - g) Process for validating operating requirements for equipment used during construction activities;
  - h) Process for validating workmanship. Include sampling plans as appropriate.;
  - i) Minimum professional qualifications for each level of design and construction in all applicable disciplines;
  - j) Process for verifying professional qualifications and maintaining the records;
  - k) Processes for analyzing and verifying updates to documents. This includes

planning documents, requirements documents, and design documents;

- I) Process for managing records, and data
- m) Process and criteria for evaluating and selecting vendors and subcontractors
- n) Process for evaluating whether design, construction, and NREL requirements are flowed down to suppliers and subcontractors
- o) Process for validating delivered equipment and supplies including inspection and testing. Include sampling plans as appropriate. Also include any special activities associated with identifying suspect and counterfeit items.
- p) Formal assessments performed during design and construction to verify compliance with requirements and processes.
- q) Process for managing issues and corrective actions identified during assessments, reviews, and inspections.
- At each formal review of the design, the Owners Representative shall submit a record of the quality control checkpoints met and the disposition of all outstanding xceptions or variances.
- Unless otherwise directed, the Owners Representative shall ensure that all construction inspections that would be required under the local permitting authorities are performed.
- 4. The Owners Representative shall ensure that all work submitted by the subcontractor for use in construction of the project is stamped or otherwise approved by an Architect or Engineer registered in the state of Colorado.

The following information is provided regarding the Environmental Assessment for the NREL Site:

### **Environmental Assessment**

The proposed RSF would be an on-site office building or multi-building office complex. Figure 2-3 shows the possible locations for the RSF in Zone 4 and/or the northeast quadrant of Zone 6 south of Denver West Parkway. The figure also illustrates the three building pads on which the RSF may be constructed. Each building pad is approximately 4,650 square meters (50,000 square feet, or just over 1 acre.) DOE would prefer to construct the RSF on Building Pads 2 and/or 3 in Zone 4 rather than on Building Pad 1 in Zone 6; however, the RSF could be built on any or all of the three building pads shown in Figure 2-3.

Regardless of ultimate location, no RSF building would exceed five stories, or about 23 meters (75 feet) above grade. However, there could be one or more one- to five-story buildings on any or all of the three building pads. The total RSF facility footprint would depend on the final number of buildings constructed and their heights. (Taller buildings would result in a smaller overall RSF building footprint.) The permanent RSF building(s) footprint could cover up to the total area of the three building pads, or approximately 1.4 hectares (3.5 acres). Additional permanent footprint for walkways, patios, bike paths, and other new common areas and amenities associated with the RSF could cover up to approximately 9,300 square meters (100,000 square feet, or about 2.3 additional acres). The final facility footprint could reflect one single RSF building or several buildings. (Visual simulations of various RSF building options are provided in Section 3.1.4, Visual Quality/Aesthetics). In addition, up to several acres would be used temporarily for building laydown and staging. These areas would be reclaimed and restored after completion of the Proposed Action.

The following are RSF Energy Target Definitions, Rev. 3, dated 3/10/08:

### **RSF Energy Target Definitions**

Updated: 03/10/08 Revision 3

Paul Torcellini, Otto Van Geet, Nancy Carlisle, Shanti Pless, Kyle Benne

**25,000 BTU/sqft goal.** This goal is intended to serve as a mechanism to create a building that uses less than this energy intensity annually within its own footprint. The goal is a demand-side goal to be achieved through energy efficiency strategies. Supply-side renewable generation options such as PV, solar hot water, biomass, wind, or renewable energy credits do not count toward the 25,000 BTU/ft2 goal. The intent is use the goal as a tool to develop a comprehensive program of efficiency measures and building operational strategies and policies to reduce energy use in the building as the first priority, rather than encouraging the use of supply side renewable options coupled with a less efficient building where all energy efficiency options have not been first fully exploited.

The whole building energy use will be measured at the building footprint. It includes all loads in the building for lighting, HVAC, plug loads, and other miscellaneous equipment, such as elevators, distribution transformers, control systems, and servers. It also includes any façade lighting and outside lighting connected through the building, and the transformer to get to 277/480 (or 120/208, depending on primary voltage).

Electrical resistance should not be used for heating. If it is, a multiplier of 2.5 will be applied to equate to a 40% combined cycle natural gas electrical production process.

Energy that crosses the building boundary as hot water will need to be divided by the efficiency of a comparable on-site natural gas boiler, as this system would otherwise be used if district hot water was not available. The combined combustion efficiency, delivery losses, and pump energy is estimated to be 90%.

Energy that crosses the boundary as chilled water will be divided by the COP of the central plant, including pumping energy. This COP is estimated to be 3.0.

Under this definition, PV and solar hot water (SHW) on the building will be considered a supply side technology, and not count toward the 25,000 BTU/ft2 goal.

Daylighting, natural ventilation, transpired collectors, Trombe walls, and other such technologies are considered demand side technologies.

The building site energy use (in Btus) will be determined based on equation 1:

# Equation 1:

Building Site Energy Use (Btu) =

Whole building electricity use (not including PV offset) in Btus

+ whole building natural gas use in Btu (not including SHW offset)

+ hot water Btus from the district hot water plant (not including SHW offset) \*1.11

+ chilled water Btus from the central cooling plant \* 0.33

The building site energy use intensity (Btu/ft2) is calculated by the site energy use divided by the gross building floor area, as defined by Deru and Torcellini.1

1 Deru, M.; Torcellini, P. (2005). *Standard Definitions of Building Geometry for Energy Evaluation Purposes*. Technical Report NREL/TP-550-38600. Golden, CO: National Renewable Energy Laboratory http://www.nrel.gov/docs/fy06osti/38600.pdf.

\\SNIFS1\shared\5500\HPBIdg\PROJECTS\NREL RSF\ZEB definitions\2007\_03\_10\_ZEB Definitions-RSF.doc 2 2 Torcellini, P., Pless, S., Deru, M. Crawley, D.; (2006). Zero *Energy Buildings: A Critical Look at the Definition.* Paper #417, Proceedings (CD-ROM), ACEEE Summer Study on Energy Efficiency in Buildings, August 13–18, 2006, Pacific Grove, CA. National Renewable Energy Laboratory, Golden, CO. 12 pp. <u>http://www.nrel.gov/docs/fy06osti/39833.pdf</u> (PDF 477 KB).

3 Deru, M.; Torcellini, P. (2006). *Source Energy and Emission Factors for Energy Use in Buildings*. Technical Report NREL/TP-550-38617. Golden, CO: National Renewable Energy Lab. http://www.nrel.gov/docs/fy06osti/38617.pdf.

**ZEB Goal.** Once the building has achieved the energy efficiency goal, it is possible to capture renewable energy sources to offset the consumption of the building. It is desired to use a Source ZEB building as defined by Torcellini and Pless in "Zero Energy Buildings: A Critical Look at the Definition". Possible renewable energy generation options include electricity generation from PV on the building, new PV generation at NREL's site, solar hot water collectors, and hot water from NREL's wood chip plant. See the ZEB hierarchy in Appendix A.

This means that a Zero Energy Building would have zero (or less) source energy use, as defined in equation 2:

# Equation 2:

Net Source Use (Btus) =

Whole building electricity use (not including PV) \* 2.894

- new PV generation on NREL site \* 2.75

- PV generation within the building footprint \* 2.894

+ Whole building gas use (not including SHW offset) \* 1.116

+ hot water Btus from the of wood chip and natural gas plant (not including SHW offset)\* 0.47

- solar hot water generation Btus that offsets gas or hot water use \* 1.116

+ chilled water entering the building from the central chiller \* 0.33 \* 2.894

Notes:

All energy units measured or determined in Btus.

Woodchips are not a fully renewable resource because of the fossil fuels required to transport the woodchips to the NREL site and the electrical pumping requirements. We have calculated 3% of the delivered wood chip hot water energy is needed for transportation. See Appendix B for the calculation of non-renewable energy use for transportation and delivery uses of wood chips to NREL.

The hot water source multiplier is based on the designed ratio of wood chip fired vs. natural gas fired district hot water. It is expected the wood chip plant will operate for 80% of the time at a 3% site to source multiplier, and the natural gas fired plant will operate at 20% of the time, with a 50% delivered efficiency and a 1.116 site to source multiplier. The resulting weighted average site to source hot water multiplier is 0.47. (Weighted average = 80% \* .03 + 20% \* 2 \* 1.116). Note that if an updated calculation of the natural gas district heating delivered efficiency is provided, we can use this efficiency to replace the 50% efficiency number we currently have.

PV generated on the building is valued slightly higher (5%) than PV energy generated on the site due to no transmission, distribution, or transformer losses.

Electricity site to source multiplier of 2.894 and natural gas site to source multiplier of 1.116 based on Deru and Torcellini3.

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If cogeneration is used within the building footprint, electricity cannot be exported at the time of cogeneration.

Our experience shows us that we probably will have to reduce the demand side loads below 25,000 BTU/sqft before adding supply side renewable generation capacity.

# Appendix A: ZEB Hierarchy

How to create a building that has zero energy impact. Hierarchy is determined based on this statement.

Prerequisite:

0. Reduce loads as much as possible through energy efficiency technologies, then use renewable generation technologies. Off-Grid:

1. Grid connected for export of surplus energy only; No purchased fuels.

2. Non-grid connected. No purchased fuels.

On-Site:

3. Grid connected; allows for import and export of fuel to meet definition. Renewable energy collected within the building footprint.

4. Grid connected; renewable energy collected within the property (site) boundary.

Off-Site:

5. Grid connected; renewable energy purchased and brought to site (wood chips, renewable energy credits, etc.)

#### Appendix B: Calculation of Wood Chip Transportation Energy Use

Conversion for RSF hot water use to wood chips source energy use (transportation energy use) Assumptions:

1. a 50% delivered efficiency wood chip boiler

2. a mix of green and air dried aspen and pine (see densities and heat contents for cord wood below), 2500 lbs/cord and 12,000,000 btus/cord assumed

3. assumed densities and heat content of wood chips similar to cord wood

4. 128,500 btu/gal of diesel used for transportation in a combination truck

5. 95.2 tons\*mile for a gallon of diesel (From LCI database)

6. 50 miles one way from wood chip collection to NREL point of use

For 1,000,000 Btus of heat delivered to the RSF,

1,000,00,/50% = 2,000,000 btus of wood chips needed,

 $(2,000,000 \text{ btus of wood chips}) * (128 \text{ ft}^3/12,000,000 \text{ btu}) = 21.3 \text{ ft}^3 \text{ of wood chips needed},$ 

21.3 ft^3 of wood chips \* 2,500 lbs/ 128 ft^3 = 416 lbs of wood chips (.208 tons),

0.208 tons \* 100 miles/ (95.2 tons\*miles/gallon diesel) = 0.218 gallons of diesel,

0.218 gal diesel \* 128,500 btu/gal = 28,120 btu of diesel needed for 1,000,000 btus of hot water delivered to the RSF,

We have not included energy to actually chip the wood, or move the chips to the point of chipping assuming that this energy would be expended to remove the chips anyhow.

So, for every unit of hot water delivered from wood chips, 3% of that energy was needed for transportation.

Source: Standard 105P: Standard Methods of Measuring, Expressing, and Comparing Building Energy Performance

# Appendix C – Plug Loads

Plug loads will be included in the demand side calculation, including a pro-rated contribution for the datacenter. Currently, the data center consumes 65 Watts/employee (continuous) in the building, not including the cooling load. This number will be used as part of the plug loads in the building. If the

datacenter is in the building, this number only represents a portion of the entire datacenter, but the portion of the datacenter that serves the remainder of the NREL campus will not be included. Likewise, if the datacenter is not in the building, this number will be used as part of the plug loads, even though they are not actually in the building. Note that this number may be reduced due to methods to make the actual hardware in the datacenter more efficient, including better UPS systems, server management software, etc.

**Appendix D – Variations in the Energy Use Intensity Based on Occupant Density** The original goal of 25 kBTU/ft2 annually was based on an assumption of 650 people in a 220,000 ft2 building. If the number of people increases for a building with a fixed footprint, the EUI can also be increased. The table below shows the allowed EUI's for variations in building size and occupancy. This in essence maintains a constant energy impact of each employee in the building as the original goal.

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Table

The following are questions and answers that have been submitted to date:

Question No. 1:	The "Qualitative Merit Criteria" for best value selection (Section 8.1-8.8 of the RFP) indicate that the selection will be based in part on numerous factors related to the teams experience and expertise in general and not necessarily related to the specific proposed design, in what format would you like to receive this information? Some of this information was submitted as part of the RFQ. Would you like to see it resubmitted as part of the RFP?
Answer No. 1:	It should be submitted as required in the RFP. Yes, it is to be resubmitted.
Question No. 2:	During the site walk on November 13, 2007, mention was made of a required setback or easement from the primary arroyo, or drainage path to the west of the SERF building. Could you please provide documentation of this requirement?
Answer No. 2:	Reference the Site Use Plan. The Site Use Plan has been modified for the Final RFP.
Question No. 3:	Under Risk Analysis Item 3B (Pg 67 of the RFP) the document states, "The owner will be required to control the energy consumption at the plug loads which will require the tight interface with the NREL staff and management. To what level will these plug loads be limited and how will the control be enacted?
Answer No. 3:	NREL will establish maximum plug loads and make them available. We are open to suggestions on maximizing the staff productivity while minimizing the plug loads, especially during unoccupied hours.
Question No. 4:	Please provide a copy of the document entitled, "RSF Energy Target Definitions" dated 10/15/07.
Answer No. 4:	RSF Energy Target Definitions dated 10/15/07 are as follows:
	RSF Energy Target Definitions

Updated: 10/15/07

Paul Torcellini, Otto Van Geet, Nancy Carlisle, Shanti Pless

**25,000 BTU/sqft goal.** This goal is intended to serve as a mechanism to create a building that uses less than this energy intensity annually within its own footprint. The goal is a demand-side goal to be achieved through energy efficiency strategies. Supply-side renewable generation options such as PV, solar hot water, biomass, wind, or renewable energy credits do not count toward the 25,000 BTU/ft2 goal. The

intent is use the goal as a tool to develop a comprehensive program of efficiency measures and building operational strategies and policies to reduce energy use in the building as the first priority, rather than encouraging the use of supply side renewable options coupled with a less efficient building where all energy efficiency options have not been first fully exploited.

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Electrical resistance should not be used for heating. If it is, a multiplier of 2.5 will be applied to equate to a 40% combined cycle natural gas electrical production process.

Energy that crosses the building boundary as hot water will need to be divided by the efficiency of a comparable on-site natural gas boiler, as this system would otherwise be used if district hot water was not available. The combined combustion efficiency, delivery losses, and pump energy is estimated to be 90%.

Energy that crosses the boundary as chilled water will be divided by the COP of the central plant, including pumping energy. This COP is estimated to be 3.0.

Under this definition, PV and solar hot water (SHW) on the building will be considered a supply side technology, and not count toward the 25,000 BTU/ft2 goal.

Daylighting, natural ventilation, transpired collectors, Trombe walls, and other such technologies are considered demand side technologies.

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+ hot water Btus from the district hot water plant (not including SHW offset) \*1.11

+ chilled water Btus from the central cooling plant \* 0.33

The building site energy use intensity (Btu/ft2) is calculated by the site energy use divided by the gross building floor area, as defined by Deru and Torcellini.1

*Evaluation Purposes*. Technical Report NREL/TP-550-38600. Golden, CO: National RenEnergy Laboratory <u>http://www.nrel.gov/docs/fy06osti/38600.pdf</u>.

2 Torcellini, P., Pless, S., Deru, M. Crawley, D.; (2006). Zero *Energy Buildings: A Critical Look at the Definition.* Paper #417, Proceedings (CD-ROM), ACEEE Summer Study on Energy \\SNIFS1\shared\5500\HPBIdg\PROJECTS\Zero Energy Buildings\RS Efficiency in Buildings, August 13–18, 2006, Pacific Grove, CA. National Renewable EnLaboratory, Golden, CO. 12 pp. <u>http://www.nrel.gov/docs/fy06osti/39833.pdf (PDF 477 KB).</u>

**ZEB Goal.** Once the building has achieved the energy efficiency goal, it is possible to capture renewable energy sources to offset the consumption of the building. It is desired to use a Source ZEB building as defined by Torcellini and Pless in "Zero Energy Buildings: A Critical Look at the Definition"2. Possible renewable energy generation options include electricity generation from PV on the building, new PV generation at NREL's site, solar hot water collectors, and hot water from NREL's wood chip plant. See the ZEB hierarchy in Appendix A.

This means that a Zero Energy Building would have zero (or less) source energy use, as defined in equation 2:

# Equation 2:

Net Source Use (Btus) =

Whole building electricity use (not including PV) \* 2.894

- new PV generation on NREL site \* 2.75

- PV generation within the building footprint \* 2.894

+ Whole building gas use (not including SHW offset) \* 1.116

+ hot water Btus from the of wood chip and natural gas plant (not including SHW offset)\* 0.47

– solar hot water generation Btus that offsets gas or hot water use \* 1.116
 + chilled water entering the building from the central chiller \* 0.33 \* 2.894
 Notes:

All energy units measured or determined in Btus.

Woodchips are not a fully renewable resource because of the fossil fuels required to transport the woodchips to the NREL site and the electrical pumping requirements. We have calculated 3% of the delivered wood chip hot water energy is needed for transportation. See Appendix B for the calculation of non-renewable energy use for transportation and delivery uses of wood chips to NREL.

The hot water source multiplier is based on the designed ratio of wood chip fired vs. natural gas fired district hot water. It is expected the wood chip plant will operate for 80% of the time at a 3% site to source multiplier, and the natural gas fired plant will operate at 20% of the time, with a 50% delivered efficiency and a 1.116 site to source multiplier. The resulting weighted average site to source hot water multiplier is 0.47. (Weighted average = 80% \* .03 + 20% \* 2 \* 1.116). Note that if an updated calculation of the natural gas district heating delivered efficiency is provided, we can use this efficiency to replace the 50% efficiency number we currently have.

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#### Appendix

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3. Grid connected; allows for import and export of fuel to meet definition. Renewab

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energy credits, etc.) Appendix B:

Conversion for RSF hot water use to wood chips source energy use (transportation energy use)

Assumptions: 1. a 50% delivered efficiency wood chip boiler

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3 Deru, M.; Torc

*B*\\SNIFS1\shared\5500\HPBIdg\PROJECTS\Zero Energy Buildings\RSF ZEB analysis\2007\_10\_15\_ZEB Definitions-RSF.doc 4 We have not included energy to actually chip the wood, or move the chips to the point of chipping assuming that this energy would be expended to remove the chips anyhow. So, for every unit of hot water delivered from wood chips, 3% of that energy was needed for transportation. Source: Standard 105P: Standard Methods of Measuring, Expressing, and Comparing Building Energy Performance **Appendix C – Plug Loads** Plug loads will be included in the demand side calculation, including a pro-rated contribution for the datacenter. Currently, the data center consumes 65 Watts/employee in the building, not including the cooling center.

Question No. 5:	What portion of the Grand Build-out is to be included in the Alternate #1?
Answer No. 5:	Is has yet to be determined.
Question No. 6.	Provide a number of people per department in the open office areas
Answer No. 6:	Reference the Program. Space Data Sheets.
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Question No. 7:	Appendices A, B-10, C-3 and D-1 were not re-issued. Are these to remain in their
	original form or are revised versions anticipated?
Answer No. 7:	Appendix A – Conceptual Documents was re-issued with the RFP. Appendices
	B-10, C-3 and D-1 can be located on the NREL website:
	http://www.nrel.gov/business_opportunities/related_docs.html
Question No. 8:	Section A, as suggested limits and split limits indicated are not obtainable in the
	marketplace anymore. Are the following insurance limits acceptable?
a. Employ	yers Liability:
i.	\$1,000,000 Disease Policy
ii.	\$1,000,000 Disease each employee limit
ili.	\$1,000,000 Each accident limit
b. Autom	obile: Occurrence limit of \$1,000,000, with umbrella policy will sitting in excess thus
achiev	ing the \$2,000,000.
c. Genera	al Liability- Can we meet the \$5,000,000 per occurrence through the use of the
umbre	
Answer No. 8:	
	Please confirm that insurance requirements outlined in the RFP are no longer
	Please confirm that insurance requirements outlined in the RFP are no longer obtainable in the marketplace by providing letters from at least two separate
	Please confirm that insurance requirements outlined in the RFP are no longer obtainable in the marketplace by providing letters from at least two separate insurance companies which make this statement. NREL will also make inquiries
	Please confirm that insurance requirements outlined in the RFP are no longer obtainable in the marketplace by providing letters from at least two separate insurance companies which make this statement. NREL will also make inquiries to further understand any changes that may be taking place in the marketplace.
	Please confirm that insurance requirements outlined in the RFP are no longer obtainable in the marketplace by providing letters from at least two separate insurance companies which make this statement. NREL will also make inquiries to further understand any changes that may be taking place in the marketplace. If NREL determines that insurance requirements in the RFP are unobtainable, we

Question No. 9:	Please provide the traffic study referenced in the Grand Build-out Plan that indicating recommended road and parking build-out.
Answer No. 9:	Information provided with Amendment No. 5 to this RFP.
Question No. 10:	Are questions asked prior to the November 28 <sup>th</sup> meeting confidential or shared with all teams?
Answer No. 10:	The information is shared unless otherwise indicated as proprietary.
Question No. 11:	How will the funding for Alternate 1 affect the start of construction of the base proposal project given that earthwork, detention, fire loops, and other services will affect construction start? How will this be recognized within the 720 day schedule of the base project?
Answer No. 11:	The funding will be available for the Site Infrastructure to support the RSF project. The Add Alternate No. 1 request for proposal is expected to be available in the middle of May 2008 for the design-builder's proposal.
Question No. 12:	Can you clarify the number of loading docks, and the length of the largest truck that needs to be accommodated in the loading area? Can you clarify the frequency of deliveries from various truck sizes?
Answer No. 12:	The answer is located in the program. One loading dock is required. The size of the vehicles in located in the performance specifications on pages 294 and 296.
Question No. 13:	On page 124 of the RFP can you provide the correct adjacency diagram for the Executive Management Offices?
Answer No. 13:	The adjacency diagram is provided as follows:



Question No. 14:	Can you clarify if there is to be a GO/IT Storage room (reference RFP page 99 note 3)?
Answer No. 14:	The IT Build/Storage room on page 99, note 8 is for NREL only. There is not an IT Build/Storage for the GO server. Only one room is to be provided for the NREL IT department.
Question No. 15:	On page 65 of the RFP states the special spaces have been prioritized, can you provide this information?
Answer No. 15:	The prioritization of the special spaces has been completed. However, it will not be included in the program. Upon selection of the design-build team, the team (NREL, GO and the Design-Build team) will have the opportunity to discuss the program. At this time, all teams have the same information and should design according to what is currently in the RFP.
Question No. 16:	Can you clarify the number of occupants desired in the lunch room?
Answer No. 16:	The lunchroom should be designed to accommodate 100 employees and visitors.
Question No. 17:	What is your definition of general conditions, and can you provide a GC/Fee/Cost of Work matrix?
Answer No. 17:	Information was provided with Amendment No. 5 to this RFP.
Question No. 18:	Can you provide the traffic study for our use?
Answer No. 18:	Information was provided with Amendment No. 5 to this RFP.
Question No. 19:	Please clarify the role of the design review board?
Answer No. 19:	The NREL Design Advisory Board (DAB) provides advice and counsel to NREL
	regarding facility planning documents, planning activities and construction
•	Advise NREL on plans related to facilities and site development, both short and
•	long range. Review proposed designs for NPEL facilities for compatibility with NPEL's most
	current design standards, site development plans, and similar documents.
•	Provide advice and recommendations to NREL via written minutes or other
	correspondence.
Throu	ghout the RSF project evolution the DAB will be actively involved in reviewing
docum	ients and providing recommendations for the design and construction of the project.
Question No. 20:	What point on the building does the 75' height restriction refer to; highest point, highest floor, or other?
Answer No. 20:	The draft Environmental Assessment language contains the following information regarding the building height: "Regardless of the ultimate location, no RSF building would exceed five stories, or about 23 meters (75 feet) above grade."
Question No. 21:	In response to the requirement for the resource loaded schedule and Earned
	Value Management System, is it acceptable to provide a sample resource loads
	schedule that we have used on another fully developed project where all
	construction items, costs, subs, etc. are known? Or, are we to provide a
	duration (General Contractor, Architect, Engineers)?
Answer No. 21:	The offeror is to provide a schedule for construction from preliminary design
	through closeout in accordance with the requirements of Article 18 of the subcontract. Also, the offeror is to provide intermediate milestone dates as noted

	on the proposal form. If the offeror chooses to provide a resource loaded schedule to accomplish this, the offeror should use the RSF project resources known to date.
Question No. 22:	Is the Mutual Letter of Commitment to be provided in advance of the proposal or with the proposal?
Answer No. 22:	The Letter of Mutual Commitment is required as part of your proposal.
Question No. 23:	Flexibility of hard walled offices:
Answer No. 23:	Using professional best practices by the design-builder, the hard walled offices and their respective square footages may be modified. The means and methods of construction are not prescribed in the RFP. The design-builder may utilize any system necessary to so long as the methods meet the performance criteria established in section C-interiors. Reference page 115, Standard Spaces for additional information.
Question No. 24:	Electronic submittals: As it states in the Quality Requirements, 3 hardcopies for Owner's use and records and 1 electronic form must be submitted during substantiation submittal procedures.
Answer No. 24:	All submittals, when applicable, should be submitted in electronic format. Three hardcopies will be required for the Owner. The documentation required remains the same. All documentation should be submitted according to the NREL specified drawing and layering conventions and following the NREL CAD manual.
Question No. 25:	Loading dock requirements and quantity:
Answer No. 25:	As it states on page 79, only one loading dock is required. Reference page 294 and 296 for performance and health and safety requirements.
Question No. 26:	Site Use Plan and the Grand Build-Out Plan:
Answer No. 26:	For the purposes of the Proposal, the boundaries identified on the Site Use Plan should be followed. Additionally, the proposal should be limited to all aspects of the project within the 5' building footprint. Reference Sheet A102 of the Grand Buildout Infrastructure Plan for additional information.
Question No. 27:	Lowest Energy Use in the World:
Answer No. 27:	The definition of the "Lowest Energy Use in the World". The design-builder (teamed with NREL) will establish the quantitative measure to be achieved. The established measure, consistent with "substantiation methods" defined in the RFP, must be recognized by the current 'design and construction industry' as valid with respect to generally accepted research and conclusions. Absolute and undeniable proof of being the "Lowest Energy Use in the World" is not required.
Question No. 28:	"How to" manual on page 13, 8.8 of the Qualitative Merit Criteria, and page 43 of the Project Objectives:
Answer No. 28:	<ul> <li>The purpose of the "How to" manual is to document how the design-builder achieved the goals and objectives of the NREL RSF Project.</li> <li>i. Documentation of the system interfaces that are used to achieve the maximum efficiencies.</li> <li>ii. The progression of systems from preliminary design to the construction completion.</li> </ul>

	<ul> <li>Systems and components that exceed the industry standards and how the decision was made to arrive at the completed systems.</li> <li>In addition to submitting documentation required to successfully achieve project closure best practices, the RSF Project is to be thoroughly chronicled, described, and reported, with the understanding that the knowledge gained through its design, construction, and operation must be effectively transferred to the nation's building industries.</li> </ul>
Question No. 29:	Is a green roof possible?
Answer No. 29:	A green roof is acceptable to the extent it is consistent with the requirements of the RFP.
Question No. 30:	Natural ventilation on page 262 now states:
Answer No. 30:	Natural Ventilation: Design and construct shell to provide natural ventilation in accordance with code and the following:
	<ul> <li>If natural ventilation is used, substantiation is required for the following items:</li> <li>v. Substantiation:</li> <li>1. Proposal: Identification of spaces relying on natural ventilation with description of ventilation concept and required building elements.</li> <li>2. Design Development: Drawings showing natural ventilation location, ventilation opening areas, and floor areas being served.</li> <li>3. Construction Documents: Engineering design calculations and drawings prepared by licensed engineer.</li> </ul>
Item No. 31:	Lunchroom occupancy: The occupant load should accommodate 100 employees and individuals.
Item No. 32:	On page 99, note 3, states the GO IT build/storage room. This space does not exist. The IT build/storage is dedicated to the NREL data center only.
Item No. 33:	On page 99, note 8, is deleted.
Item No. 34 <sup>.</sup>	West Metro additional requirements:
	Reference Part 3 Performance Specifications, Fire Protection, page 282 for Fire protection for additional requirements. The Supplemental Rules and Regulations were recently adopted and therefore, included as an Appendix.
Item 35: Enviro	onmental Assessment:
Inform	nation is made part of Amendment No. 6 to this RFP.
Question No. 36:	In Part 3 Performance Specifications, in the Limited Sitework section, it indicates this work includes "connections to within 5 feet of the facility for proper functioning of the facility" This seems to indicate all sitework and utility improvements on the site. A. Is this section intended to describe Alternate 1 only or are sitework and utilities "to within 5 feet (everything outside of 5') to be included in the base bid? B. "for proper functioning of the facility" could mean 600 car parking, all utilities, all roadways including offsite connections to city streets, etc. recommended in the site study. Is this intended to be a part of the base bid?

Answer No. 36:	Connections within 5 feet of the facility are to be included in your price proposal. Anything beyond 5 feet will be included in Add Alternate No. 1 - Site Infrastructure work.
Question No. 37:	Regarding the .skp file provided in Amendment No. 5: This drawing and the program/energy calculations - do they represent an actual building in Boulder or are they a model?
Answer No. 37:	The The building model and corresponding simulation which NREL provided do not represent an actual building. The model is generated by NREL's example file generator using inputs that are representative of the RSF.
	The example file generator is available at the following URL. <u>http://www.eere.energy.gov/buildings/energyplus/interfaces_tools.html</u>
	The inputs used by NREL can be found in the attachment, "rsf_simulation_inputs.xps".
	The skp file is a Google SketchUp file and must be opened with SketchUp. We have tested this file and it does open. It can also be recreated with the example file generator (which generated the file originally.)
Question No. 38:	The Subcontract indicates sub-tier mechanical and electrical subcontractors are required to be provided in the proposal, are these the MEP engineers? The proposal form does not request the MEP construction subcontractors to be listed.
Answer No. 38:	Article 10 of the subcontract lists key personnel. The lower-tiered mechanical and electrical subcontractors are required as well as the MEP company or professional which will be coordinating the efforts of both the mechanical and electrical subcontractors.
Question No. 39:	Energy goal is stated in most cases as "as little as 25 kBtu/sf/yr", but is also stated on page 67 as "no more than 25 kBtu/sf/yr". Please confirm if this energy requirement has been relaxed to a goal instead of mandatory.
Answer No. 39:	The wording should state, "as little as"
Question No. 40:	Facility Performance substantiation item A.4.1.1 (referring to A.4.h) does not appear on the Proposal Phase Substantiation Checklist. Please confirm that it is required at the Proposal Stage.
Answer No. 40:	The referenced substantiation item is to be included on the Proposal Stage substantiation list.
Question No. 41:	Is there an anticipated amount of time we should include in the schedule for review and approval of Preliminary Design prior to Notice to Proceed For Phase II Design and Construction ?
Answer No. 41:	The Owner's Representative has allocated 15 days for review and <u>acceptance</u> within the RFP. Phase II for Design and Construction will be negotiated as soon as the design-builder is able to commit to meeting performance requirements in the performance specifications. Once negotiations for Phase II of the subcontract are completed and all requirements met, a Notice to Proceed for Phase II of the subcontract can be issued.
Question No. 42:	What is the "Earned Value Management System" referenced in relation to the project schedule?

Answer No. 42:	NREL establishes, monitors and manages its projects by the use of an earned value management system (EVMS). The contractor's requirements to support the EVMS are detailed in the RFP.
Question No. 43:	The RFP references BIM as a requirement of the project, but later indicates that Autocad 2008 as-builts are to be provided to the owner. The project could be created and maintained in REVIT throughout the project to maximize BIM. Does NREL have capabilities to utilize REVIT documents or must the drawings be created in Autocad 2008 and converted for BIM application ?
Answer No. 43:	As discussed in the Proposal One-On-One meetings, the building BIM information needs to be compatible with AutoCad 2008.
Question No. 44:	In Part 2 - Program, the Equipment and Workspace requirements do not appear to be flexible, only the SF. Please confirm if the entire program requirements can be made flexible to adjust to mutually determine functionality and future workspace needs.
Answer No. 44:	Previously answered. The RFP does not dictate the means and methods for construction. The systems utilized are flexible to the extent that the meet the performance specifications as outlined in Part 3, Section C- Interiors.
Question No. 45:	May the percentage amount of glazing be reduced on the east and west facades?
Answer No. 45:	There is no language in the RFP to determine the size of the glazing on any orientation.
Question No. 46:	NREL has clarified during meeting 1 that the indication that existing furniture can be reused, has been revised and existing furniture may now no longer be reused as a method to address the RFP. Does this direction include the requirement to provide conference and training room tables, and in some cases also chairs?
Answer No. 46:	Yes. The design-builder is required to provide conference and training room furnishings in accordance with the RFP, Part 2 – Program.
Question No. 47:	Article 16 refers to items in Article 17, that must be provided upon Notice to Proceed. These items include Schedule of Values, list of Lower-Tier Subcontractors involved in on-site labor, and other deliverables that will not be known until later in the process when the design is more developed and the project is bid. Please confirm if the referenced Notice to Proceed is the NTP for construction, and further please confirm what Project Management documentation is required at the NOA with Preliminary Design.
Answer No. 47:	Please refer to Amendment No. 4, last paragraph of page 4 of 300, which states, "Prior to subcontract execution for preliminary design (Phase I), terms and conditions relevant and applicable to Phase I of the subcontract will be specified in Article 34 – Alterations to Terms and Conditions". Deliverables outlined in Article 16 of the Subcontract Schedule which pertain to only Phase II of the subcontract and on-site work will be specifically addressed prior to subcontract award.
Question No. 48:	The Proposal Form asks for values of Direct Work, Self Performed Work and Indirect Work for a value not greater than \$64,261,000. These values will not be known, nor will estimates of these values be known, until the Preliminary Design is approved. Please confirm what portions of the Proposal Form are to be filled in for the Phase I Price Proposal. Please also confirm what is being requested by

	G&A% and Overhead% within the personnel rates and mark ups (for example is insurance costs to be included in one of these?
Answer No. 48:	The Proposal Form and Attachments to Proposal Form are to be completed and submitted as part of your proposal. All information in the <u>shaded</u> areas are to be completed and provided as part of your proposal. Insurance costs are an indirect cost to this project and can be accounted for in only one indirect cost pool.
Question No. 49:	Work hours were confirmed as 8-5 on NREL work days. Construction work hours may be required to be longer, such as on concrete placement days, shifted due to weather. Additionally Saturdays or off hours may be required to maintain schedule or coordinate utility tie ins and shut downs. Please confirm if the construction hours may vary to accommodate construction.
Answer No. 49:	Please refer to Article 19 – Coordination of Work with Laboratory Schedule and Average Adverse Weather Days. First paragraph states, "Unless otherwise approved in writing by the Subcontract Administrator, the Subcontractor's work shall be performed during NREL work days." Approval is required to work outside of the prescribed schedule.
Question No. 50:	Identification of Mock-ups, page 257, substantiation, item D, number 1. Outline Specifications, page 258, substantiation, item F, number 2. Are they required to be included in the proposal?
Answer No. 50:	Mock-ups should only be included should the design-builder choose to substantiate items in this manner. There are alternative forms of substantiation. The products should be identified as part of the proposal. As it states, "identify <u>one</u> or more product types for each system, assembly, or element".