The California State University
OFFICE OF THE CHANCELLOR

UNDERSTANDING THE MSR PROCESS

A. General

The purpose of this document is to provide an understanding of the **Mechanical Systems Review (MSR)** process for major capital outlay projects. The success of the MSR review process hinges upon (a) early involvement of the Mechanical Review Board (MRB) reviewing member in the design process, (b) timely input from the MRB member to the design team, and (c) prompt response from the design team to the MRB member and resolution of the issues raised or concepts proposed.

To gain the full benefit from the MSR process the campus should retain the MRB member at the onset of the design efforts. Depending upon the construction delivery method this might be as soon as the A&E team is selected for a given project or as soon as an RFP is about to be drafted for a Design-Build project or as soon as the energy services company (ESCO) is contracted to develop the preliminary assessment (PA) for the energy efficiency projects. For maximum effectiveness, campuses are encouraged to involve the MRB member at the feasibility study stage to assist the campus in formulating design objectives and energy efficiency goals early in the building development process.

MRB members will make their best efforts to engage in a dialog with the design teams as soon as design work commences and provide feedback to the design teams within 2-weeks of receipt of the design documents. Campuses are urged to follow up with the design teams to ensure that MRB comments are responded to or incorporated as needed.

For Design-Bid-Build projects and CM@Risk projects, the Office of the Chancellor will need a concurrence letter from the MRB member at the 75% schematic design submittal and a final comments resolution letter before the 100% construction documents are released for bid.

For Design-Build projects the Office of the Chancellor will need a request for proposal (RFP) concurrence letter from the MRB member prior to issuing the RFP; at the 75% schematic design submittal and a final comments resolution letter before the 100% construction documents are released for construction.

The following summarizes the overall scope and lists the basic steps in the overall process.

B. Scope

1. MSR reviews are required for all major capital projects. The types of projects at the CSU include Design-Bid-Build projects, CM@Risk projects, Design-Build projects and energy efficiency projects. The MSR review is required on any of these types of projects. Parking lots, some parking structures and other similar

projects with minimal or no mechanical systems that would otherwise receive marginal or no benefit from the MSR are exempted from the this process. Contact CPDC to confirm exempt status.

2. MSR is typically focused on the mechanical systems in buildings, central plants and related campus infrastructure. Electrical systems directly related to the providing adequate electrical capacity to the operation of the mechanical systems are also generally part of the review.

3. As an optional extra service to the agreement, campuses may issue a supplemental Service Order Authorization to the MRB reviewer to provide an electrical systems review of the project.

C. Design-Bid-Build and CM@Risk Method

1. Campus retains Project Architect for a given project
2. Campus selects one of the MRB members as the MSR review professional for the project
3. Campus encourages an ongoing dialog between the A&E team and the MRB member to discuss design concepts and goals
4. Campus shares campus specific design guidelines with the A&E team and the MRB member to ensure conformity of design with campus specific constraints early in the process
5. Campus shares list of do's and don'ts based on campus experience with the A&E team
6. Dialogs result in exchange of ideas and means to achieve energy efficient and cost effective project that would be easy to maintain.
7. MRB member shares CSU Knowledgebase with campus and the design team
8. MRB member suggests consideration of meaningful alternatives for life cycle cost (LCC) analyses
9. MRB member reviews 75% schematic design submittal and upon satisfaction provide a letter of the concurrence with the design
10. MRB member reviews the basis of design and design documents in various phases (Schematic Design Documents (SD), Preliminary Design (PD), 50% Construction Documents (CD) & 95% CD and provide written design review comments
11. MRB member interfaces and interacts with commissioning agent as required
12. Campus and MRB member confirm that commissioning requirements are incorporated into the bid document
13. Upon receipt from the campus MRB member to review A&E's responses to recommended changes indicated in the response columns of the MSR comments
14. Upon satisfaction MRB member issues the final comments resolution letter following completion of the CD phase

15. MRB reviewer member is available as a resource to the design team and the campus during the construction phase of the project
16. Architect / Engineer remains responsible for the design of the project.

D. Design-Build Method

1. Campus retains RFP development consultant(s)
2. Campus selects one of the MRB members for the project MSR
3. Campus proposes campus specific design guidelines that are to be part of the RFP including design build guidelines
4. Campus encourages ongoing dialog between MRB member and Consultant team(s) on program expectations, campus specific constraints, project design submittal requirements, level of information and requirements to be addressed in the RFP
5. Campus and MRB member ensure that CSU policy with respect to the Title 24 requirements, and other CSU requirements including commissioning, metering, electric panel arc flash, limitations on single source specification are incorporated into the RFP process
6. MRB member reviews the RFP and upon satisfaction issues RFP concurrence letter
7. MRB member becomes part of the technical review either voting or non-voting committee member and provides assistance as required in the Design-Build team selection process including the review of the Design-Build team's response to the RFPs
8. Campus introduces selected Design-Build team to the MRB member assigned to the project
9. MRB member and campus share list of do's and don'ts in the design process based on campus experience and RFP criteria
10. Campus, MRB member and Design-Build Contractor engage in dialog during the design process to achieve CSU energy efficiency objectives as stated in the RFP
11. MRB member shares CSU knowledgebase with Design-Build teams
12. MRB member ensures meaningful alternatives are examined for Life Cycle Cost (LCC) analyses as stated in RFP criteria
13. Upon receipt of the design submittals from the campus MRB member reviews these submittals in various phases as spelled out in the RFP (Basis of design report, SD, PD, 50% CD and 95% CD and provide written design review comments. Design-Build team provides response to these comments
14. Upon receipt of the Design-Build response to the comments MRB member reviews the D&B team's responses to recommended changes
15. MRB member interfaces and interacts with commissioning agent as required
16. MRB member issues final comments resolution letter following completion of the CD phase

17. MRB members is available as a resource to the Design-Build team and the campus during construction
18. Design-Build team remains responsible for the design of the project.

E. Energy Efficiency Projects

1. Campus retains MRB member at the outset (such as development or review of Rider A which stipulates the proposed project scope and other requirements)
2. MRB member assists campus in proposal evaluation
3. MRB member reviews PA submittals submitted by two but no more than three ESCOs as applicable to the energy use to the extent required to confirm that the proposals and estimates on savings potential are reasonable
4. MRB member participates in the presentations by the ESCOs, who developed PAs to decide the firm to move forward with the Investment Grade Assessment (IGA) phase of the project
5. As project moves to the IGA phase of the project, MRB member participates in the IGA kick off meeting
6. MRB member to review the IGA submittal for the technology applications, engineering calculations, life cycle cost analysis, commissioning of the project, monitoring and verification plan, schedule of values, construction cost estimate and reasonableness of the overall approach to the project
7. MRB member shares CSU Knowledgebase with ESCO who developed the IGA
8. Upon receipt of the design documents from the campus MRB member reviews the design in various phases as outlined in Rider A (SD, PD, 50% CD and 95% CD)
9. MRB member reviews the approach to the savings and the design in various phases to make sure that the original intent on energy savings and economics are not compromised
10. MRB member interfaces and interacts with commissioning agent as required
11. Upon receipt from the campus MRB member reviews the A&E's responses to recommended changes
12. Upon satisfaction MRB member issues the final Comments Resolution Letter following completion of the design phase
13. MRB member is available as a resource to the Design-Build team and the campus during construction.

F. Links to the CSU Documents

Mechanical Systems Review Home Page for CSU:
http://www.calstate.edu/cpdc/ae/mech_systems_review.shtml

CSU Guidelines and Submittal Requirements and Procedure Guide for CSU Projects:
http://www.calstate.edu/cpdc/ae/guidelines.shtml

Campus Specific Design Guidelines: (Please contact campus to understand campus specific design criteria)

CSU Knowledgebase:
http://www.digitalenergy.com/csumrb/login.cfm

CSU Life Cycle Cost Analysis:
http://www.calstate.edu/cpdc/ae/Life_Cycle_Cost_Worksheet.xls

CSU Commissioning Home Page for CSU:
http://www.calstate.edu/cpdc/ae/Commissioning_guidelines.pdf

CSU Energy Policy:
http://www.calstate.edu/eo/EO-987.html

CSU Energy and Utilities Home Page:
http://www.calstate.edu/cpdc/peu/

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