

NSLS-II Beamline Development Proposal Procedure

(Revision 07/23/15)

I. Introduction

Through its strategic planning process and engagement with the user community, NSLS-II management will guide the continued build-out of the NSLS-II suite of beamlines. In order to structure and vet the selection of beamlines through external review, a Beamline Development Proposal Procedure has been established, which is described in this document. It covers the process from proposal conception through approval of the proposal to submission of funding proposal(s). Progressing through each step of the procedure involves demonstration of a compelling case for the proposed beamline that clearly meets a set of seven distinct criteria. These criteria are described in Section II of this document and the four-step procedure is described in Section III. Each progressive step of the procedure requires a more comprehensive level of scientific and technical analysis with a more exhaustive review.

II. Review Criteria

Beamline Development Proposals are reviewed according to the following criteria:

1. **Science Case**: Does the research enabled by establishment of the proposed beamline have the potential to address important scientific and/or societal questions? Is the proposal consistent with the facility goals as stated in the NSLS-II Strategic Plan?
2. **Funding**: Is there a credible potential funding scenario for the projected beamline costs?
3. **User Demand**: Is there evidence of significant interest, engagement, and support for the proposed beamline facility by the user community?
4. **Performance**: Will the proposed beamline provide the performance necessary to fulfill its scientific mission, with characteristics well matched to the NSLS-II source?
5. **Technical Feasibility**: Is achieving the proposed beamline capabilities technically feasible?
6. **Portfolio Impact**: Does the proposed beamline contribute to a balanced NSLS-II portfolio of beamline techniques and does it complement beamline resources at other synchrotron facilities?
7. **Quality of Proposers**: Are the proposal team members experienced in the proposed field of research and/or technique and are they representative of the potential user community?

III. Submission and Review Process

Every NSLS-II Beamline Development Proposal (BDP) must have two co-leads with one an external university, industry, or government laboratory leader in research or development and the second a member of the NSLS-II scientific staff. The co-leads will coordinate engagement of the relevant sectors of the research and development

communities while the NSLS-II co-lead will also coordinate the use of NSLS-II resources needed for the proposal development.

The submission and review of a BDP involves four steps:

1. Proposers should engage NSLS-II management (NSLS-II Deputy for Science, Photon Science Division (PSD) Director, PSD Deputy Director, or PSD Program Managers) in a discussion of a proposed beamline concept in order to determine whether the proposed concept is aligned with the strategic plan for the facility and likely to meet all of the review criteria. NSLS-II management contact information is contained in Appendix A. If the proposed beamline concept is supported by NSLS-II management and a member of the NSLS-II staff is not already part of the proposal team, then a member of the NSLS-II scientific staff with the appropriate expertise and interest will be identified to serve as NSLS-II Co-Lead on the proposal.
2. Prepare and submit a Beamline Development Pre-Proposal (BDPP). The first BDPP deadline is October 30, 2015. Future BDPPs can be submitted on or before the General User Proposal deadlines that occur three times per year. The BDPP is comprised of cover pages identifying the External Co-Lead, the NSLS-II Co-Lead, and the Co-Proposers, and a 3-page proposal describing the beamline concept and how the beamline concept addresses each of the BDP review criteria, a signature page for the co-leads, and biographical information for co-leads and co-proposers. The signature page and biographical information are not included in the page count. Further details concerning the content required for each section of the BDPP are contained in Appendix B. BDPPs are reviewed by NSLS-II management following the BDP review criteria. NSLS-II management may require additional information on the proposed beamline concept and may also solicit review reports from experts in the field as needed. A decision will be rendered in a timely manner. If a BDPP is approved, NSLS-II management commits to partnering with the BDPP team in developing a high-quality BDP. Depending on budget constraints, this commitment may include providing scientific, engineering, and designer support as well as funding a BDP Workshop to engage additional expertise. Taking into account funding initiative schedules, NSLS-II management will assign approved BDPPs a BDP submission deadline that is associated with a meeting of the NSLS-II SAC and which will be approximately two months prior to that meeting.
3. Submit the BDP on or before the assigned BDP submission deadline. The BDP is similar in structure to the BDPP with each section providing more detailed information obtained from different sources such as a workshop, on-going consultation with experts, additional design or engineering efforts, scientific or technological advances, additional funding opportunities. The BDP is comprised of cover pages identifying the External Co-Lead, the NSLS-II Co-Lead, and Co-Proposers, a 10-page proposal describing in greater detail the beamline concept and how the beamline concept addresses each of the BDP review criteria, a signature page for the co-leads, and biographical information for co-leads and co-proposers. The signature page and biographical information are not included in the page count.

Further details concerning the content required for each section of the BDP are contained in Appendix C. The BDP is reviewed by an external BDP Review Panel which reports to the NSLS-II SAC as to how the BDP case meets all of the review criteria and if it is compelling enough to be approved as a beamline at NSLS-II and to go on and attempt to secure funding in its current form, with minor revisions, with major revisions, or not at all. If revisions are needed, the BDP Review Panel and NSLS-II SAC will specify the necessary revisions. The Proposal Co-Leads should revise the BDP to address the NSLS-II SAC recommendations and submit the revised BDP to the NSLS-II Director. A proposal requiring major revisions will be returned to the BDP Review Panel to determine whether their requested revisions have been adequately addressed. The NSLS-II Director makes the final decision on whether to endorse the BDP.

4. Prepare the Funding Proposal(s) for submittal. At this stage, an integrated project team will be formed comprised of NSLS-II staff including scientific, engineering, and project controls support together with selected members of the BDP team. This group will meet at least monthly to develop and submit the funding proposal(s). Details of the proposal(s) will depend on funding agency requirements. NSLS-II will participate in discussions with all potential funding sources. The proposal(s) can only be submitted with the approval of the NSLS-II Director.

IV. Annual Reporting Requirements

All BDPs that have been approved by the NSLS-II Director are subject to annual review by the NSLS-II SAC, which will advise the NSLS-II Director on whether the BDP team has made progress in securing funding and whether the BDP case continues to be compelling and competitive for NSLS-II and for funding. The NSLS-II Director makes the decision whether to continue or terminate the BDP. The first annual BDP review occurs at the NSLS-II SAC meeting following the 1year anniversary of receiving NSLS-II Director approval.

V. Beamline Design and Construction

We expect all beamlines to follow a conceptual to preliminary to final design process and to follow accepted NSLS-II standards. The beamline design and construction process will be covered by a separate document.

Appendix A

NSLS-II Management Contact Information

Qun Shen, *Deputy Director for Science* (631-344-3465, qshen@bnl.gov)

Paul Zschack, *Photon Science Division Director* (631-344-8703, pzschack@bnl.gov)

Sean McSweeney, *Photon Science Division Deputy Director & Structural Biology Program Manager* (631-344-4506, smcsweeney@bnl.gov)

Klaus Attenkofer, *Hard X-Ray Spectroscopy Program Manager* (631-344-5146, kattenkofer@bnl.gov)

Eric Dooryhee, *Diffraction & In-Situ Scattering Program Manager* (631-344-2409, edooryhee@bnl.gov)

Lisa Miller, *Imaging & Microscopy Program Manager* (631-344-2091, lmiller@bnl.gov)

Ron Pindak, *Complex Scattering Program Manager* (631-344-7529, rpindak@bnl.gov)

Stuart Wilkins, *Soft X-Ray Scattering & Spectroscopy Program Manager* (631-344-2851, swilkins@bnl.gov)

Appendix B

NLSLS-II Beamline Development Pre-Proposal

The length of each section of the proposal should not exceed the specified page limits

A. Cover (1-2 pages):

Title of the Pre-Proposal:

External Co-Lead (single point of contact for the pre-proposal): *Name, Affiliation, Address, Contact Information*

NLSLS-II Co-Lead: *Name, Contact Information*

Co-Proposers:

Name, Affiliation, Address, Contact Information (repeat for each member of the proposal team)

B. Beamline Concept and How Selection Criteria are Addressed (3 pages - after removing the text in italics):

i. **Science Case**

Describe the science or technology areas that the beamline will impact and how the beamline will support high-impact and/or high-throughput research and development projects in these areas.

ii. **Funding**

Describe the funding scenario that has been identified and what would be required to secure the beamline funding. If a specific funding initiative is involved, describe the requirements including the funding initiative goals, any matching funds, and proposal deadline. Identify any potential Partner User contributions to the proposed beamline.

iii. **User Demand**

Provide evidence of significant interest, engagement, and support for the proposed beamline facility by the scientific community citing user demand at other synchrotron facilities and Partner User groups who will submit Partner User Proposals to the beamline.

iv. **Performance**

Explain how the proposed beamline will provide the performance necessary to fulfill its scientific mission, with characteristics well matched to the NLSLS-II source. Describe why the proposed beamline would be competitive among national and international facilities or what features would make it optimized for different science or technology areas.

v. Technical Feasibility

Taking into account the NSLS-II source properties, state-of-the-art optical fabrication and detector performance specifications, and facility data handling capabilities, demonstrate that the proposed beamline performance specifications are feasible to achieve. Note any R+D that might be required.

vi. Portfolio Impact

Describe how the proposed beamline will contribute to a balanced NSLS-II portfolio of beamline techniques. Also describe how the beamline will complement beamline facilities at other national synchrotrons.

C. Signatures (1 page):

The Beamline Development Pre-Proposal should be signed by the Proposal External Co-Lead and the NSLS-II Co-Lead.

D. Biographies of the Proposal Co-Leads and Co-Proposers (1 page each):

Appendix C
NSLS-II Beamline Development Proposal

The length of each section of the proposal should not exceed the specified page limits

A. Cover (1-2 pages):

Title of the Proposal:

External Co-Lead (single point of contact for the pre-proposal): *Name, Affiliation, Address, Contact Information*

NSLS-II Co-Lead: *Name, Contact Information*

Co-Proposers:

Name, Affiliation, Address, Contact Information (repeat for each member of the proposal team)

B. Beamline Concept and How Selection Criteria are Addressed (10 pages - after removing the text in italics):

i. Science Case

Describe the science or technology areas that the beamline will impact and how the beamline will support high-impact and/or high-throughput research and development projects in these areas. Cite specific examples of potential science or technology advances enabled by the facility indicating the key information provided and how the information complements that provided by other techniques.

ii. Funding

Describe the funding scenario that has been identified and what would be required to secure the beamline funding. If a specific funding initiative is involved, describe the requirements including the funding initiative goals, matching funds, and proposal deadline. Also describe how the beamline concept satisfies the goals of the funding initiative and the result of preliminary discussions with funding program managers and anticipated contributions from Partner Users.

iii. User Demand

Provide evidence of significant interest, engagement, and support for the proposed beamline facility by the scientific community citing user demand at other synchrotron facilities. If a workshop has been held, provide a link to the workshop description and list of participants. If industry will be impacted, provide supporting evidence. Describe how potential Partner User groups will facilitate growth of the user community.

iv. Performance

Explain how the proposed beamline will provide the performance necessary to fulfill its scientific mission, with characteristics well matched to the NSLS-II source. Include performance comparisons with other, existing or planned, comparable beamline facilities at other synchrotrons.

v. Technical Feasibility

Taking into account the NSLS-II source properties, state-of-the-art optical fabrication and detector performance specifications, and facility data handling capabilities, demonstrate that the proposed beamline performance specifications are feasible to achieve. This section should include design, engineering, or scientific input from NSLS-II staff. If additional R&D efforts are required, a detailed description should be provided.

vi. Portfolio Impact

Describe how the proposed beamline will contribute to a balanced NSLS-II portfolio of beamline techniques, impacting a broad range of science and technology. Also describe how the beamline will complement beamline facilities existing at other national synchrotrons. If there are comparable beamline facilities at other national facilities, describe how programs could be coordinated.

C. Signatures (1 page):

The Beamline Development Proposal should be signed by the Proposal External Co-Lead and the NSLS-II Co-Lead.

D. Biographies of the Proposal Co-Leads and Co-Proposers (1 page each):