

Governance and Organization of the Rubin Observatory Legacy
Survey of Space and Time Dark Energy Science Collaboration

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Governance and Organization of the Rubin Observatory Legacy Survey of Space and Time (LSST) Dark Energy Science Collaboration

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Background

The LSST Dark Energy Science Collaboration (DESC) was established at a meeting in June 2012. An interim governance model was presented and adopted at that meeting. The positions needed for the management team in this interim period were filled by individuals who were ready and able to carry out the tasks for the first year.

In November 2012, the DESC made public a White Paper [arXiv:1211.0310] that described the need for the DESC and identified high priority tasks to be carried out in the first three years of the collaboration. The goal of the DESC is to develop and execute a high-level plan for the study of dark energy and associated fundamental physics of the Universe with Rubin Observatory LSST data. As described in the White Paper, this will include the development and optimization of a complete set of cosmological analyses that will be performed with the data, the detailed study of systematic issues that may compromise those analyses, the clarification of the sensitivity of those analyses to various technical aspects of the Rubin Observatory system design, the identification and assembly of observational resources necessary to carry out the analyses, the generation and refinement of simulations and other tools required to validate the analyses, and the identification and assembly of the computational resources to support such investigations both before and after the onset of data taking.

In the White Paper, a minimal governance structure was outlined with the intent that a Governance Working Group would be established to propose a longer term, more complete governance model that builds on the one-year initial phase. In July 2013, the five members of the Advisory Board were charged with drafting a governance plan with broad input from the DESC. This document is the product of that effort and was ratified by the Collaboration in July 2014. A separate Membership Policy was reviewed and ratified in May 2015 after the Collaboration Council was established.

Governance and Organization

The governance plan consists of a management team, an Advisory Board, a Collaboration Council, a Membership Committee, a Publication Board, a Speakers Bureau, an Equity, Diversity, and Inclusion Committee, and a Mentoring Committee. The management team consists of a single Spokesperson, a Deputy Spokesperson, an Analysis Coordinator, a Computing and Simulation Coordinator, a Technical Coordinator,

and an Operations Manager. Further Coordinator roles deemed necessary to cover additional high-priority tasks within a given Spokesperson term may be approved solely on a term-by-term basis by the Council as part of the overall ratification of the Management Plan. These additional Coordinators should have their specific roles explicitly outlined in the Management Plan.

The DESC has both informal and formal connections to the Rubin Observatory Project. Since a number of the members are working directly on the Project, the DESC has direct access to technical information regarding the detailed performance characteristics of the various subsystems. The DESC has several more formal avenues for communicating concerns about the Rubin Observatory LSST system design that might compromise its effectiveness for dark energy investigations and requesting information from the Rubin Observatory Project as outlined in the collaboration’s Operations Management Plan.

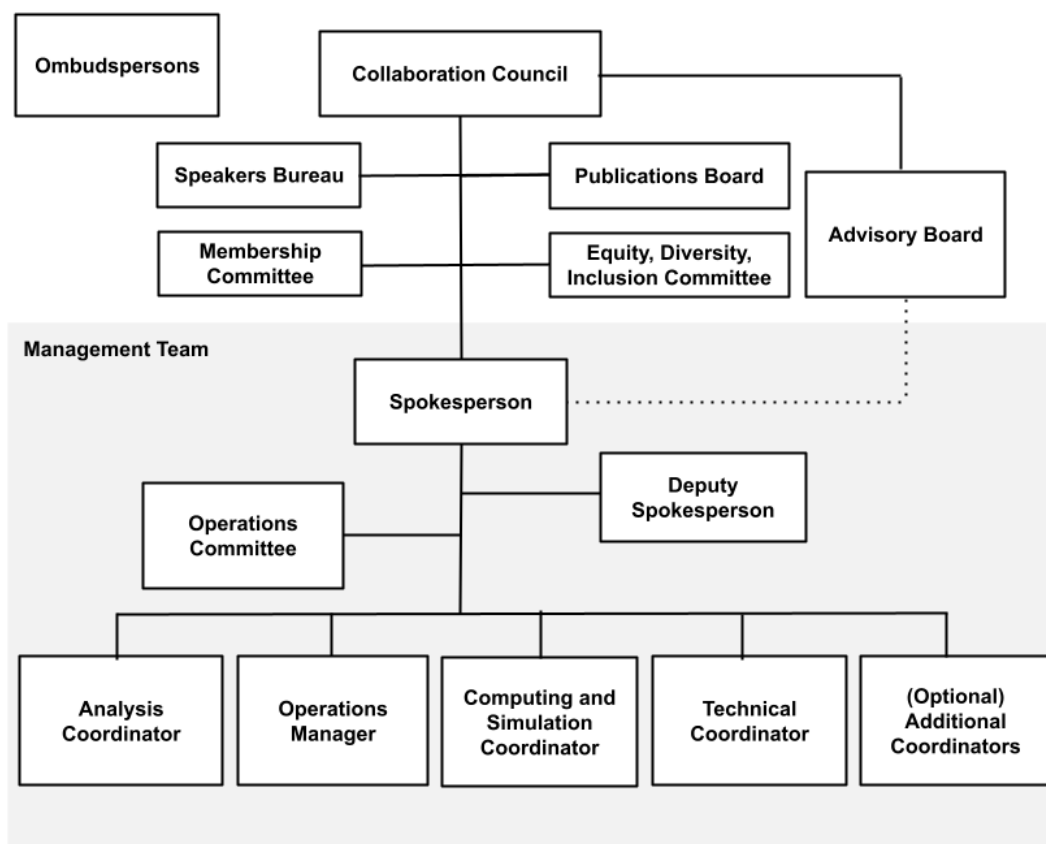


Figure 1: LSST Dark Energy Science Collaboration organizational chart.

The organizational structure is shown in Figure 1. The roles are described in more detail below.

The Spokesperson and members of the Advisory Board and the Collaboration Council will be selected for terms of two years through the processes described below. The governance plan does not define fixed terms for the Coordinators, the Operations Manager, or for Conveners of working groups; these are specified in the Management and Operations Management Plans. However, turnover in leadership can be beneficial because it increases engagement of a larger number of people, recognizes the contributions and abilities of individuals, and provides opportunities for leadership development. In cases where term limits are not imposed, the management team should nonetheless revisit leadership positions regularly.

When internal resources are required to support the activities led by the entities specified in this Plan, the said entities will communicate those needs to the Operations Committee.

The Management Team

The Spokesperson

The DESC will be led by a single Spokesperson who has overall responsibility for all scientific, technical, organizational, and financial aspects of the Collaboration. The Spokesperson is the contact person for the DOE Office of High Energy Physics and other funding agencies. For any agency issue that requires a U.S.-based contact, if the Spokesperson is not U.S.-based, the Operations Manager will be the contact person and will coordinate with the Spokesperson as appropriate.

The Spokesperson serves for a fixed two-year term and may not be elected for a consecutive term. Under the circumstance that no candidates for the next Spokesperson term are identified, the term of the Spokesperson may be extended in annual increments up to four years (see Spokesperson Election Process). The Spokesperson will also serve as Spokesperson-elect for six months before the two-year term begins and as past-Spokesperson for three months after the two-year term ends, to allow an overlap period between the incoming and outgoing spokesperson to facilitate the transfer of responsibilities.

Spokesperson selection process

The Spokesperson term begins October 1. The formal Spokesperson selection process must begin at least one year before the expiration of the current spokesperson's term. There must be a six-month transition period between the election of the Spokesperson-elect and the October 1 start of the new term. This period allows the Spokesperson-elect time to manage other responsibilities, appoint their management team, arrange relevant support, and to prepare to fulfill Spokesperson responsibilities (e.g. through shadowing the Spokesperson).

The Spokesperson Succession Committee (SSC) will gather (self-)nominations from the collaboration and verify the availability and eligibility of the potential candidates. The SSC will then confirm a slate of two or more candidates to be considered in an election. The candidates will be introduced to the collaboration at the time of the first collaboration meeting of the year, or March 1, whichever is earlier, and the election will take place before the end of March.

If the SSC cannot identify at least two qualified candidates, then the following procedure is applied : 1. If only one candidate has been identified as qualified by the SSC, an up-or-down vote of DESC Full Members is held. The candidate will become Spokesperson-elect if a majority of the voting members approve. 2. If no willing, qualified candidates are identified, or if the one candidate has not received a majority of the votes, then the current Spokesperson is asked by the CC to stay on as Spokesperson for a third year (or potentially a fourth year if the same situation occurs the following year). 3. If the current Spokesperson declines, or on the basis of extensions has been in the role for four years, then an interim Spokesperson will be appointed and execute the office as described in the procedure for early termination of a Spokesperson's term. 4. The nomination/election process for a new Spokesperson will always be repeated in the following year, i.e. advancing the 2-year cycle of Spokesperson terms, in the case of a failure to elect a candidate.

The electing body for the spokesperson is the set of all Full Members^[1].(#footnote1)

Deputy Spokesperson

The Deputy Spokesperson will be responsible for overseeing many of the ongoing operations of the Collaboration.

The Deputy Spokesperson is designated by the Spokesperson and confirmed by the Collaboration Council.

Coordinators

The Management Team will always have at a minimum the following coordinator-level positions, with additional coordinators possible and established on a term-by-term basis as part of the Management Plan.

Analysis Coordinator

The Analysis Coordinator is responsible for coordinating the analysis tasks needed in preparation for achieving the science goals of the DESC. The Analysis Coordinator is responsible for managing and achieving the list of analysis tasks identified as high priority in the latest version of the DESC science planning roadmap, both in specific science areas and in cross-cutting areas.

Computing and Simulation Coordinator

The Computing and Simulation Coordinator is responsible for planning for and coordinating computational resources, and the development of associated software and simulations necessary to carry out the work of the DESC, including the data challenges outlined in the DESC science roadmap.

Technical Coordinator

The role of the Technical Coordinator is to coordinate the interactions between those with technical knowledge of the components of the Rubin Observatory system and those on the analysis teams who are improving the understanding of the impacts that particular technical issues might have on the science analyses.

Operations Manager

The role of the Operations Manager is to coordinate and oversee DESC operations activities, and the interactions between these activities and those they support in the analysis, computing and technical working groups to achieve the collaboration science goals. If the Spokesperson is not U.S.-based, the Operations Manager will be the contact person for any funding agency issue that requires a U.S.-based contact and will coordinate with the Spokesperson as appropriate.

The Coordinator and Operations Manager positions all require specialized expertise and a significant time commitment. The Coordinator positions will be filled by recommendation of the spokesperson, after appropriate consultation with constituents in the DESC, and confirmed by the Collaboration Council. The Operations Manager position will be filled by recommendation of the spokesperson in consultation with the DOE Host Lab (SLAC) as well as other DESC constituents, and confirmed by the Collaboration Council. The Operations Manager will have a line management role in SLAC for the duration of the appointment, though they need not have held one previously.

The Management Plan

Certain elements of the management structure are not defined in the governance plan but are expected to be part of a Management Plan that is proposed by the Spokesperson in consultation with the Advisory Board, and ratified by the Collaboration Council. We give several examples here.

- i) The areas spanned by the Coordinators are each quite broad. Therefore, the Management Plan may include the definition of a working group structure for efficiently carrying out tasks. The roles and responsibilities of Working Groups, the evolution of the Working Groups, and the process for selecting new Working Group leaders are defined in the management plan.
- ii) The Management Plan may identify liaison roles for communicating with Rubin Observatory Project, collaborations carrying out precursor or concurrent surveys, and other external resources.

In addition, the specific roles and responsibilities of individual members of the management team will be established in the Management Plan.

The Operations Management Plan

The Management Team in consultation with SLAC is responsible for producing the DESC Operations Management Plan. This document provides details of the management structure for DESC operations tasks. The Operations Manager and an Operations Committee are key components in this structure. The roles

and responsibilities of all relevant parties and the process for selecting Operations Committee members are defined in the Operations Management Plan. The Operations Management Plan requires approval of the DESC Collaboration Council for ratification and remains in place unless amended.

Relationship of the Rubin Observatory Project to the DESC

The Rubin Observatory Chief Scientist is part of the Rubin Observatory Project team and acts as an interface between the Rubin Observatory Project and the science community. The Rubin Observatory Project Director may also be invited to join the discussions of the Management Team as needed. The Spokesperson can also appoint additional Project liaisons with roles and responsibilities defined in the Management Plan. More details of the formal connections between the Rubin Observatory Project and the DESC are outlined in the DESC Operations Management Plan.

Relationship of Other Projects to the DESC

The Spokesperson can appoint liaisons between DESC and external projects. These liaisons are typically members of DESC. The roles and responsibilities of the liaisons are defined in the Management Plan.

The Advisory Board

The Advisory Board consists of five voting members, who will be chosen to bring broad knowledge of the community, the funding agencies, and the science goals to the collaboration. The members of the Advisory Board provide advice to and work with the management team to help define policy issues as they arise; they do not directly manage the technical and scientific work of the collaboration. The Advisory Board will select its own chair on an annual basis. The Spokesperson chairs joint meetings of the management team and the Advisory Board.

The membership of the Advisory Board should be broadly representative - e.g., type of institution, funding source, science expertise, etc. The members of the Advisory Board will be selected by the Collaboration Council for two-year terms.

The Collaboration Council

The Collaboration Council represents the full membership of the Collaboration, facilitates discussion of collaboration-wide issues, and has overall responsibility for LSST DESC policies and procedures, including

- Ratifying the LSST DESC organizational structure, by-laws, and policies (including this document).
- Approving proposed modifications or additions to the by-laws and policies. Such modifications or additions may be proposed by the Spokesperson or a Collaboration Council member.
- Appointing the Spokesperson Nominating Committee.
- Selecting the members of the Advisory Board.
- Reviewing and approving policies on membership and appointing a Membership Committee to consider applications for membership.
- Developing a publication policy that is consistent with the template LSST Science Collaboration Publication Policy and appointing a Publication Board to execute that policy.

All motions to ratify or modify the organization or governance of the Collaboration must pass by a two-thirds majority vote.

Upon the recommendation of a majority of the Advisory Board, the Collaboration Council may vote to remove the Spokesperson by a two-thirds majority. If the Spokesperson is unable to complete their term for any reason, the same procedure below will be followed as in the case of removal of the Spokesperson: - A) If there is a Spokesperson-elect, they will assume the Spokesperson position immediately. - B) If there is no current Spokesperson-elect, an interim Spokesperson will be selected by the following procedure: - 1 - The Deputy

Spokesperson is invited to serve as interim Spokesperson. - 2 - If the Deputy Spokesperson is not willing to step in as Spokesperson, then the Operations Manager is requested to become the interim Spokesperson. - 3 - If the Operations Manager does not accept the position, the Advisory Board is empowered to propose an interim Spokesperson for approval by a majority vote of the CC. An incoming interim Spokesperson may invite some or all other members of the Management team to extend their terms to the completion of the interim period, and will recruit substitutes for any who decline. An interim Spokesperson could create a new Management Plan, amend the current plan, or keep the current plan.

Elections for a new Spokesperson will be scheduled as quickly as possible while maintaining the calendar recommended in the Timeline of the Process section, as follows: - 1 - If an interim Spokesperson takes office while a Spokesperson nomination/election process is already in progress, then the interim Spokesperson will serve until the election is completed and the new Spokesperson takes office. - 2 - If no Spokesperson nomination/election process has been initiated, and the need for an interim Spokesperson is known before November 1 of calendar year X, then a nomination/election process will be initiated for elections in March of year X+1, regardless of whether this was to have been an election year. - 3 - If the need for a new Spokesperson is not known until after November 1 of calendar year X, and no nomination/election is in progress for March of year X+1, then the next election will remain in March of year X+2, and the interim Spokesperson will serve until the term of the newly elected Spokesperson begins.

The Collaboration Council will select its own two co-chairs on an annual basis. The co-chairs will fulfill responsibilities such as forming nominations committees and running elections.

The membership of the Collaboration Council should be diverse on many scales – e.g., representing both labs and universities, with backgrounds in both particle physics and astronomy, and a focus on both hardware and analysis. The membership should broadly represent the demographics, career stages, and geographic regions of the members of the DESC. The Collaboration Council will begin with at least 20 members but can increase in size as DESC membership grows. Members will serve two-year terms with half the members being replaced each year.

The Collaboration Council will establish a nominating committee each year to solicit nominations for new Council members from the Full Members of the DESC. The nominating committee will work to ensure a slate of nominees that is broadly representative of the DESC. All Full Members of the DESC will be invited to rank or rate the set of nominees. When the set of highest ranked nominees does not maintain the desired broad and diverse representation on the Council, the nominating committee may go deeper in the ranking to appoint up to one-third of the new members to ensure broad representation.

Membership Committee

The Membership Committee receives and reviews applications for new Members and new Full Members, as described in the Membership Policy. In the initial phase of the DESC, the Membership Committee was tasked with finalizing the membership policy, a process that was completed in 2015.

The Membership Committee has eight members, selected to represent the diversity of DESC Working Groups, geographical regions and collaboration demographics. The committee members serve for two years, with four members rotated every year. New committee members may be nominated by either the Collaboration Council or the Membership Committee, and are selected by the Collaboration Council within three months of the Council election. At least one Membership Committee member must also be a Collaboration Council member. In addition to the eight members, an Operations Management team member will act as a non-voting ex-officio liaison between the Membership Committee and Operations Management. The ex-officio liaison is selected by the Operations Manager and approved by the Collaboration Council.

The Membership Committee decides who will chair or co-chair the committee; the Committee chair or chairs is ratified by the Council.

Publication Board

The role of the DESC Publication Board, and the manner in which members are selected, is detailed in the DESC Publication Policy. In brief, it oversees the logistics of the publication process for all DESC publications, including implementing and carrying out a publication review process. The Publication Board is appointed by and reports to the Collaboration Council. The Publication Manager is responsible for coordinating the activities of the Publication Board and has specific responsibilities described in the Publication Policy.

Speakers Bureau

The role of the DESC Speakers Bureau, its specific responsibilities, and the manner in which members are selected, are defined in the DESC Speakers Bureau Policy. The Speakers Bureau is appointed by and reports to the Collaboration Council. The Speakers Bureau is intended to be a resource for DESC members, adding value to presentations by collaboration members and helping to improve the standing of the entire collaboration.

Equity, Diversity, and Inclusion Committee

The role of the Equity, Diversity, and Inclusion (EDI) Committee is to proactively ensure that the collaboration is fostering an inclusive environment and promoting equity and diversity within the collaboration. The EDI Committee is expected to consult available external resources and domain expertise, especially well-established social science research. The specific efforts may include monitoring and reporting of demographics and statistics, education of the collaboration, and making recommendations to the Management team, the Collaboration Council, and other collaboration entities.

The Collaboration Council will ratify a detailed charge to the EDI Committee and maintain it on the public DESC webpage.

The EDI Committee will consist of two co-chairs and four to six additional members, with two-year staggered terms for both co-chairs and committee members. The Collaboration Council selects the co-chairs and committee members. At least one of the EDI Committee members should be a Council member to serve as a liaison to the Council. The DESC representative on the Diversity, Equity and Inclusion Council of the Rubin Science Collaboration Federation, if not a current EDI Committee member, will be an ex officio member of the EDI Committee. Observing committee members can be added with the Committee's approval, and must be listed on the corresponding webpage and internal wiki page.

Spokesperson Succession Committee

The roles of the SSC are to promote development of a pool of collaboration members with leadership experience and skills relevant to the Spokesperson role, and to manage the nomination process and vetting of potential Spokesperson candidates. The SSC is a standing committee with broad representation among different constituencies of the collaboration. The committee members are selected and ratified by the Collaboration Council. The committee members include two members from the Collaboration Council, one member from the Advisory Board, one member from the EDI Committee, three DESC at-large members, the current DESC Spokesperson and the DESC Operations Manager.

Mentorship Program

The DESC Mentorship program provides incoming junior DESC members with advice and mentorship to navigate the collaboration. The Mentoring program is run by a Mentoring Committee with two co-chairs; the program is overall overseen by the Spokesperson team. The mentorship program assigns one-on-one pairings of volunteer faculty and postdoc mentors for postdoc and student mentees; arranges training sessions on how to mentor effectively, including using sessions with professional facilitators; review itself annually to ensure

that mentors and mentees are well matched; and arranges ‘speed chat’ sessions at the semi-annual DESC meetings to help identify new potential mentors for DESC mentees.

The Mentoring committee consists of between 8 and 12 members, usually appointed for 2 year periods, with the option for reappointment. The Collaboration Council appoints the committee, after discussion with the Spokesperson team. The committee internally selects its two co-chairs and these are approved by the Council and the Spokesperson team. A management team member (usually the deputy spokesperson) serves as an ex-officio member of the mentoring committee.

[1] Categories of membership are described in a separate document – the Membership Policy.

Appendix

A1. Version History

- Initial version ratified by Full Members of the LSST DESC July 2014.
- Amended July 2015 to change “Executive Board” to “Advisory Board”, remove names from Organizational Chart in Figure 1, and change tense in references to Collaboration Council and Membership Policy.
- Amended February 2016 to include Operations items: Plan, Manager, and Committee, and also Liaisons to Synergistic projects.
- Amended March 2016 to include the duties, composition and evolution of the Membership Committee.
- Amended December 2016 to clarify the wording on Spokesperson terms.
- Amended August 2017 to update several out-of-date aspects (DESC-Project communication, responsibilities of the Coordinators, and existence of Management and Operations Plans) and describe the Publication Board and Manager.
- Amended December 2017 to clarify that it is the DESC Operations Management Plan that is the Council-ratified document that “provides details of the management structure for DESC operations tasks.”
- Amended May 2019 to refer the specification of membership review process to the Membership Policy.
- Amended July 2019 to permit the Spokesperson to appoint additional coordinator-level roles on a term-by-term basis.
- Amended September 2019 to clarify the requirement of identifying liaisons in the Management Plan.
- Amended June 2020 to take into account update in the Operations Management Plan and project name.
- Amended December 2020 with new chart from Operations and updated Rubin/LSST naming.
- Amended August 2021 to add the formal codification of the Equity, Diversity, and Inclusion Committee. Figure 1 updated to reflect this change.
- Amended October 2021 to add the DESC Speakers Bureau to the Governance structure. (Figure 1 updated to reflect this change), and to introduce co-chairs for the Collaboration Council.
- Amended June 2023 to better accommodate an international Spokesperson with respect to funding agency requirements.
- Amended December 2024 to introduce the Spokesperson Succession Committee, and define clearer procedures for the Spokesperson election and term execution.
- Amended November 2025 to introduce the Mentoring program as a permanent part of DESC.

- Amended April 2026 to allow for rated (alongside ranked) voting systems for the Collaboration Council elections.

A2. License

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