



Are there policies specific to Large Programs?

Sarah Wood - 2023-05-08 - Project Planning

According to the Large Program section of the [ALMA Proposers Guide](#)

Large Programs are proposals with an estimated execution time of greater than 50 hours on the 12-m Array (with or without accompanying ACA time) or 150 hours on the 7-m Array in stand-alone mode. Large Programs should not involve time-critical or ToO observations, and may not include full polarization measurements, Solar observations, VLBI, Phased Array mode, or Astrometric observations (see Section A.9.5 of the [ALMA Proposers Guide](#) for more information on Astrometric observations).

There is no overall cap on Large Programs, but they may fill no more than 50% of the time at a given LST and configuration (Section 3.3 of the [ALMA Proposers Guide](#)).

Clarification: The fraction of time in a configuration that can be allocated to Large Programs is constrained to make it likely that observations can be completed within one Cycle. The JAO will report on the scheduling feasibility of Large Programs to the APRC.

Proposal teams will need the following information to assess the scheduling feasibility of their program:

- PIs should assume that a source will be observed over an hour angle range of ± 3 hours for declinations of $\delta < 32$ deg. For sources with $\delta > 32$ deg, PIs may assume sources will be observed while above an elevation of 20 deg.
- The Proposer's Guide (Figure 5) shows the number of hours available for PI science observations and Large Programs in each array configuration. The histograms can be downloaded in text format from the Proposer's Guide.
- The Proposer's Guide also shows the fraction of time that is expected to be suitable for observations in a given receiver band in a given month of the year and time of day (Figure 3 and 4).
- The Proposer's Guide lists the configuration schedule along with the range of LST when the weather conditions are best (Table 3).

Examples: Estimating scheduling feasibility for Large Program.

A proposal team wants to survey a sample of 30 protostars at 0.06" resolution in Band 7. The protostars are located at a right ascension of 5 hours and declination of -20 deg. The ALMA Observing Tool indicates that the observations, including all calibrations, can be completed with 45 hours of time in configuration C-7 (see also Table A-1 in the Proposer's Guide). Since the sources are at declination of -20 deg, the observations will take place +/-

3 h around transit, or between 2 h and 8 h LST.

For this example, assume that the time available for science observations in C-7 between an LST of 2 and 8 h is 96 hours. PIs should check the Proposer's Guide for the actual time available. The time available for Large Programs in C-7 over this LST range is then 48 h (i.e., half the available time).

PIs also need to check the amount of time available for Band 7 observations. If configuration C-7 is scheduled for October, the LST range with the best weather conditions will be between LST of 22 h and 10 h. Since the sources in this example can be observed between 2 and 8 LST, they can be observed in the period with generally stable weather conditions (i.e., night time). The weather conditions in October at night are expected to be suitable for Band 7 observations 60% of the time. Therefore configuration C-7 will have $\sim 96 * 0.6 = 57$ h available for Band 7 observations.

Since the requested time in C-7 (45 h in Band 7) is less than the time available for Large Programs (48 h) and less than the time expected for Band 7 weather (57 h), the Large Program is considered feasible.

On the other hand, if the proposal requested 60 h of Band 7 time in C43-7, it would exceed the time available for Large Programs and the time suitable for Band 7. The proposed Large Program would then be judged to be at risk to be completed during the Cycle. The proposal team could reduce the risk by requesting a range of angular resolutions (e.g., 0.03-0.06") so that the observations can be spread between C-7 and C-8. Note that if the requested range includes both long-baseline and more compact configurations, only the latter will be considered.

Proposals teams of Large Programs are encouraged to discuss the scheduling feasibility in the Scientific Justification.

The Large Program section of the [ALMA Proposers Guide](#) states:

"The proposal team for a Large Program should not in parallel submit their Large Program as one or more Regular Proposals, in which case the Regular Proposals will not be considered."

Clarification: Proposal teams that submit a Large Program should not attempt to submit their proposal twice by simultaneously submitting their Large Program as Regular proposals. The JAO will identify any such proposals by looking for duplicate observations (see the [Users Policies](#) for the definition of a duplicate observation) between the Large Program and Regular proposals. Proposal teams may submit Regular Proposals that observe the same sources as their Large Program if the requested observations 1) are not formal duplicates (see example b below) or 2) are a subset of the required dataset (see example c below).

Examples: Submitting Large and Regular Proposals

A proposal team submits a Large Program to observe 100 galaxies in CO J=1-0.

The proposal team is also consider submitting in parallel the following regular proposals:

- a) The Large Program team feels they can achieve the same basic goals as the Large Program by observing a subset of the 100 galaxies. They therefore submit a regular proposal that observes 30 galaxies in the Large Program with the same spectral line, sensitivity, and angular resolution. The Regular Proposal will be disallowed since the Regular Proposals duplicate observations in their Large Program.
- b) The proposal team wants to observe one of the galaxies in the Large Program in CO J=1-0, but with three times better sensitivity than requested in the Large Program. These observations do not duplicate observations in the Large Program according to the ALMA Duplication Policy and are therefore a Regular Proposal is allowed.
- c) The proposal team wants to observe one of the galaxies in the Large Program in both CO J=1-0 and J=3-2. Even if the CO J=1-0 observations are observed to the same sensitivity and angular resolution as in the Large Program, the Regular Proposal is allowed as long as it is justified why both CO transitions are required.