1.0 purpose

Project scheduling provides the basis for planning when in time work will be accomplished. The PPPL planning process emphasizes the development of schedules that are realistic, complete, logical, and reflect the way work is planned to be accomplished. The baseline schedule forms the basis for the time-phased performance measurement baseline. The schedule also fosters communication within the project team; establishes a baseline for project status monitoring, reporting, and control; facilitates effective management; and provides the basis for resource estimating, analysis and leveling, exploration of alternatives, and cost/time tradeoff studies.

2.0 SCOPE

This procedure applies to all PPPL projects required to implement the PPPL Project Management System Description (PMSD). All projects will have project schedules that are prepared and maintained by the Project Team and approved by the Project Manager, and others as required.

3.0 REFERENCES

**3.1** DOE Order 413.3B, “Program and Project Management for the Acquisition of Capital Assets”

**3.2** Project Management System Description (PMSD)

**3.3** PM Procedure 1.8, Performance Measurement and Monthly Status Reporting

**3.4** PM Procedure 1.9, Change Control

4.0 Required materials, equipment, supplies, tools, and manpower

Schedules will be prepared using Primavera, Microsoft Project, or similar scheduling software as approved by the project manager.

5.0 Procedure

Project managers will prepare and maintain an overall baseline project schedule for their assigned projects, and ensure that all other schedules are consistent with the baseline schedule. Project schedules should contain sufficient detail to effectively manage and control the project. They should not be developed in any more detail than is necessary for cost-effective planning and management of the project.

5.1 General

Project schedules will generally consist of:

* The project activities.
* An estimated amount of time to complete the activity, known as the duration.
* The scheduled start date and completion date for each activity.
* The project initiation and completion dates (completion date milestone).
* Important deliverables (task products) as milestones.
* Milestones for Key events and major decision points.
* Predecessors and successors, interdependencies in the form of logic links.
* The critical path(s).
* Float (slack).
* Cost or resource loading.

5.2 Earned Value Management Schedule Hierarchy

As provided for in the PPPL PMSD, PPPL will develop, utilize, and keep current three categories of interrelated schedules. The PPPL PMSD schedule hierarchy provides levels of schedules that are logically consistent to maintain the integrity of the performance measurement baseline. The schedule hierarchy is shown as Appendix A. These schedules will be used as tools to facilitate and achieve project goals and schedule commitments and will generally reflect the following:

5.2.1 Baseline Schedule

The Baseline Schedule is the key control and contractual schedule for the entire project, start to finish, that includes all major control milestones, and major activities included in the project. The Baseline Schedule is the basis for project schedule performance. The project manager is responsible for developing the Baseline Schedule and subsequently executing the project in accordance with the agreed to milestones reflected in the Baseline Schedule. The Baseline Schedule is maintained under configuration management and may not be revised without proper authorization.

5.2.2 Current Schedule

The Current Schedule enables the determination of critical paths and an evaluation of the effects of the current schedule performance status on activities and milestones scheduled to be accomplished in the future. The Current Schedule includes detailed input from all Control Account Managers (CAMs) providing the ability to relate activities and milestones between different levels of schedules. The Current Schedule must be consistent with key deliverables, control and contractual milestones as reflected in the Baseline Schedule and the Project Execution Plan (PEP), when applicable.

The Current Schedule is a working-level schedule that reflects the actual status of the project at a current point in time and shows the work performed and the milestone accomplishments. The Current Schedule matches the Baseline Schedule at a re-baseline and may start to migrate as the schedule is statused. The Current Schedule in updated at least monthly, or more frequently as determined by the Project Manager, and is used by the CAM’s as a key control and analysis tool to manage the work and identify areas needing corrective action.

5.2.3 Supplemental Schedules

Supplemental Schedules are prepared at the discretion of the Project Manager or CAM as an added tool to facilitate and control a certain aspect or timeframe of the project. These can be computerized or manually generated documents. Examples can include: weekly or monthly rolling or look ahead schedules, various subcontractor schedules, detailed procurement schedules, startup schedules, etc. Supplemental Schedules are not under configuration control, but they must support the Baseline Schedule milestones.

5.2.4 Control Account/Work Package Schedules

The activities necessary to accomplish the scope identified in the Control Accounts (CA) and Work Packages (WP) are identified by the Control Account and Work Package managers, respectively, and their supporting Subject Matter Experts (project team members). Activities, durations, and activity interrelationships are developed at the CA level. If the CA is subdivided into WPs, this is accomplished at the WP level. In effect, each WP will have a corresponding schedule (and corresponding scope and resource/cost estimate). WP schedules will roll-up to the CA level. CA schedules will roll-up to the respective WBS element.

5.3 Schedule Development

The development of PPPL schedules will be sequential and iterative during the planning process leading to the establishment of a formal project baseline. Schedule development will follow scope definition and precede resource estimating. The activities comprising the schedule form the basis for estimating resource requirements. Iteration is necessary during the planning stage in order to ensure all approved and defined scope is reflected in the schedule and that activities are scheduled when resources are planned to be available. Iteration is also important to ensure that durations are realistic and that all interdependencies are identified. Prior to the establishment of the baseline, initial schedule development occurs at the CA and WP levels by the CA and WP managers who will be responsible for the work. The CA and WP schedules are rolled up to the various levels of the WBS and reviewed, and if necessary, iterated to ensure they are supportive of customer and project goals. Schedules are formally base-lined at CD-2. The PPPL schedule development process is shown as Appendix B.

5.4 Critical Path Method (CPM)

All PPPL PMSPD compliant projects will use critical path method scheduling as a management tool and to assess progress. The critical path will be determined using the industry standard method. After the project is base-lined and work is initiated, the critical path will be re-assessed based on work accomplishment/schedule performance. At any point in time, the project will have at least one critical path that represents those linked activities that represent the longest continuous path leading to project completion. The critical path, by definition, is comprised of activities with no float. PPPL managers will pay particular attention to the performance of activities on the critical path in that they represent a potential day-for-day delay in project completion, should their actual duration exceed their planned duration. The critical path is shown at all times in the Current Schedule and will be recalculated and analyzed based on actual performance following each reporting period.

5.5 Scheduling Guidelines

The development and management of PPPL PMSD compliant schedules will include consideration of the following:

* The level of detail and accuracy of the schedule improves as the project scope becomes better defined through the project phases.
* For the purpose of preventing informal changes in the baseline, the original schedule file is documented and saved as a point of reference.
* A status file is created from a copy of the projects “Target File” (Schedule Baseline). The analyst performing the schedule updates place percent complete, actual start and actual finish data into the status file. A comparison of the status file with the Target file indicates changes in number of activities, original duration, or other symptoms of informal alterations occurring to the schedule baseline. Such alterations should only take place using a process that leaves an audit trail.
* In conjunction with Earned Value reporting requirements, subcontractors are expected to transmit the following schedule status information (unless it is not required by their contract):
* Actual Start dates for activities begun during the status period.
* Actual Finish dates for activities completed during the status period.
* Actual occurrence dates for milestones accomplished during the status period.
* Percentage complete and/or remaining duration of activities that have started but are not yet complete.

6.0 APPENDIX

6.1 Appendix A: Schedule Hierarchy

6.2 Appendix B: Project Schedule Process

APPENDIX A

Scheduling Hierarchy

