

## NCSX Scope Reductions from CD-1 to CD-2

**PDR Panel Report Comment:** The Project should document the items removed from the scope baseline between the CDR and the PDR. The rationale for these changes should be included in this documentation. This will provide a documented history for removal of these components and justification for their consideration as upgrades during operations.

<b>WBS</b>	<b>Item</b>	<b>Cost (\$k)</b>	<b>Rationale</b>
11	Day-1 Poloidal Limiters	280	Temporary “Day-1” limiters proposed at CD-1 were deleted due to the elimination of the OH phase in research plan.
22	Torus Vacuum Pumping	160	Day-1 pumping speed reduced to 1,300 l/s, 50% of CD-1 performance. This is adequate to begin research program. Design can accommodate future upgrade to 150% of CD-1 performance if necessary.
23	Glow Discharge Cleaning	170	Glow discharge cleaning (GDC) not needed to begin the research program since vacuum vessel bakeout to 150°C is available and provides adequate conditioning. Design can accommodate GDC as a future upgrade if necessary.
25	Neutral beam injection	740	In-scope NBI equipment preparation reduced to 1.5MW, 50% of CD-1 performance. This is adequate for the first NBI heating experiments, which begin a few months after First Plasma. The design can accommodate 6MW of NBI via future upgrades if necessary.
31	In-vessel magnetic sensors	620	Not needed to begin the research program because ex-vessel sensors will provide adequate functionality. The design can accommodate future installation of system of in-vessel magnetic sensors when the research program requires it.
35	Interferometer	300	Not needed to begin the research program, which starts with magnetic configuration mapping following First Plasma. The design can accommodate installation of an interferometer when the research program requires it.
43	Magnet Power System	330	Number of circuits reduced from 9 to 6. This is adequate to begin research program. Design can accommodate future upgrade to 10 circuits if necessary.
4, 5, 6	Power, I&C, and Utilities	750	Reductions in support systems associated with the above primary scope reductions.
5	Central I&C System	1,500	NCSX facility layout allows greater use of local as opposed to remote controls. This is a value improvement that provides CD-1 functionality at reduced cost.
	<b>Total</b>	4,850	