

# CRS Report for Congress

Received through the CRS Web

## Navy DD(X) and CG(X) Programs: Background and Issues for Congress

Ronald O'Rourke  
Specialist in National Defense  
Foreign Affairs, Defense, and Trade Division

### Summary

The FY2006-FY2011 Future Years Defense Plan (FYDP) reduces planned DD(X) destroyer procurement to one per year in FY2007-FY2011 and accelerates procurement of the first CG(X) cruiser to FY2011. The DD(X)/CG(X) program poses several issues for Congress. For a longer discussion of the DD(X) and CG(X), see CRS Report RL32109, *Navy DD(X), CG(X), and LCS Ship Acquisition Programs: Oversight Issues and Options for Congress*, by Ronald O'Rourke.<sup>1</sup> This report will be updated as events warrant.

### Background

The DD(X) destroyer and CG(X) cruiser are part of a proposed new family of surface combatants that also includes the small Littoral Combat Ship (LCS).<sup>2</sup> The DD(X) would have a full-load displacement of about 14,564 tons, which would make it roughly 50% larger than the Navy's 9,500-ton Aegis cruisers and destroyers, and larger than any Navy destroyer or cruiser since the nuclear-powered cruiser Long Beach (CGN-9), which was procured in FY1957. The DD(X) is to be a multimission ship with an emphasis on naval surface fire support (NSFS). It would incorporate several major new technologies, and be equipped with two 155-mm Advanced Gun Systems (AGSs) and 80 missile tubes. It would have a crew of 125 to 175 persons, compared to more than 300 on current Navy destroyers and cruisers. In large part due to its reduced crew size, the DD(X) is to cost substantially less to operate and support (O&S) than the Navy's current cruisers and destroyers. The CG(X) would be derived from the basic DD(X) design, but would have a more powerful radar than the DD(X), as well as additional missile tubes rather than AGSs. The CG(X) might be larger and more expensive than the DD(X).

---

<sup>1</sup> CRS Report RL32109, *Navy DD(X), CG(X), and LCS Ship Acquisition Programs: Oversight Issues and Options for Congress*, by Ronald O'Rourke.

<sup>2</sup> For more on the LCS, see CRS Report RS21305, *Navy Littoral Combat Ship (LCS) Program: Background and Issues for Congress*, by Ronald O'Rourke.

The Navy in early 2005 said it had a requirement for 8 to 12 DD(X)s and 15 to 18 CG(X)s within a planned fleet of 260 to 325 ships. A new Navy ship force structure plan to be announced in early 2006 may alter these figures. The FY2006-FY2011 Future Years Defense Plan (FYDP) reduced planned DD(X) procurement to one per year for FY2007-FY2011 and accelerated procurement of the first CG(X) to FY2011. Estimated DD(X) unit procurement costs (see **Table 1**) have increased substantially since 2004. The estimate for the first DD(X) increased from about \$2.8 billion to \$3,291 million, or about 18%. The estimate for the second DD(X) increased from \$2,053 million to \$3,061 million, or about 49%. The estimates for subsequent DD(X)s increased from about \$1.5 billion and \$1.8 billion each to about \$2.2 billion to \$2.6 billion each, or roughly 45%. **Table 1** shows DD(X) and CG(X) funding through FY2011.

**Table 1. DD(X)/CG(X) Funding, FY2002-FY2011**  
(millions of then-year dollars, rounded to nearest million)

	02	03	04	05	06	07	08	09	10	11	FY02-FY11
<b>Research, Development, Test &amp; Evaluation, Navy (RDTEN) account</b>											
DD(X)	505	909	1015	1164	1085	794	445	282	279	323	6801 <sup>a</sup>
CG(X)	0	0	0	0	30	110	279	365	397	403	1584 <sup>a</sup>
<b>Subtotal RDTEN</b>	<b>505</b>	<b>909</b>	<b>1015</b>	<b>1164</b>	<b>1115</b>	<b>904</b>	<b>724</b>	<b>647</b>	<b>676</b>	<b>726</b>	<b>8385<sup>a</sup></b>
<b>Shipbuilding and Conversion, Navy (SCN) account (including advance procurement)</b>											
DD(X) 1	0	0	0	220	666	2405	0	0	0	0	3291
<i>Construction</i>	0	0	0	22	306	2405	0	0	0	0	2733
<i>DD/NRE<sup>b</sup></i>	0	0	0	198	360	0	0	0	0	0	558
DD(X) 2	0	0	0	84	50	163	2764	0	0	0	3061
<i>Construction</i>	0	0	0	5	40	120	2677	0	0	0	2842
<i>DD/NRE<sup>b</sup></i>	0	0	0	79	10	43	87	0	0	0	219
DD(X) 3	0	0	0	0	0	0	51	2492	0	0	2543
DD(X) 4	0	0	0	0	0	0	0	51	2579	0	2630
DD(X) 5	0	0	0	0	0	0	0	0	50	2186	2236
DD(X) 6+	0	0	0	0	0	0	0	0	0	0	0
CG(X) 1	0	0	0	0	0	0	0	0	0	3210	3210
<i>Construction</i>	0	0	0	0	0	0	0	0	0	2710	2710
<i>DD/NRE<sup>b</sup></i>	0	0	0	0	0	0	0	0	0	510	510
CG(X) 2+	0	0	0	0	0	0	0	0	0	0	0
<b>Subtotal SCN</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>304</b>	<b>716</b>	<b>2568</b>	<b>2815</b>	<b>2543</b>	<b>2629</b>	<b>5396</b>	<b>16971</b>
<b>TOTAL</b>	<b>505</b>	<b>909</b>	<b>1015</b>	<b>1468</b>	<b>1831</b>	<b>3472</b>	<b>3539</b>	<b>3190</b>	<b>3305</b>	<b>6122</b>	<b>25356</b>

**Source:** U.S. Navy data provided to CRS on Mar. 24, 2005.

a. Additional funding required after FY2011. Figures do not include \$1,111.4 million in RDT&E funding provided for DD-21/DD(X) program in FY1995-FY2001. GAO has reported that total DD(X)/CG(X) RDT&E costs are roughly \$10 billion.

b. Detailed design and nonrecurring engineering costs for the class.

Until September 30, 2005, the DD(X) was being developed by a national industry team lead by Northrop Grumman's Ship Systems (NGSS) division (which includes the Ingalls Shipyard in Pascagoula, MS) and Raytheon Systems Company. The team also

included GD/BIW as well as Lockheed Martin, Boeing, and several other companies. The Navy ended the national industry team arrangement on September 30, 2005. Since then, the Navy has been managing the DD(X) program through a series of separate contracts with major DD(X) contractors, including NGSS, GD/BIW, Raytheon, and BAE Systems (the maker of the AGS).

Under the Navy's previous DD(X) acquisition strategy of record, which was approved in February 2004, the first DD(X) would be built by NGSS, the second would be built GD/BIW, and contracts for building the first six DD(X)s would be equally divided between NGSS and GD/BIW. In February 2005, Navy officials said they would seek approval from DOD to instead hold a one-time, winner-take-all competition between NGSS and GD/BIW to build all DD(X)s. On April 20, 2005, DOD deferred this proposal as premature, but agreed to a Navy proposal to separate the DD(X) system-development and software-development contracts from the DD(X) detailed-design effort. Section 1019 of the Emergency Supplemental Appropriations Act for 2005 (H.R. 1268/P.L. 109-13 of May 11, 2005) effectively prohibits a winner-take-all competition to build all DD(X)s. The provision does not prohibit the Navy from shifting to a DD(X) acquisition strategy that somehow involves a second shipyard, even if that involvement were limited, for example, to building only one ship in the DD(X) program. On May 25, 2005, the Navy announced that, in light of Section 1019, it wants to shift to a "dual-lead-ship" acquisition strategy under which two DD(X)s would be procured in FY2007, with one to be designed and built by NGSS and the other by GD/BIW. Each ship would be split-funded (i.e., incrementally funded) in FY2007 and FY2008. The two yards might then compete for the right to build all subsequent DD(X)s, in which case this strategy could be viewed, at that point, as a "winner-takes-all-remaining-ships" approach.

On November 23, 2005, the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (USD ATL) granted Milestone B approval for the DD(X), permitting the program to enter the System Development and Demonstration (SDD) phase. USD ATL also approved a low rate initial production quantity of 8 ships, and separately approved a DD(X) Acquisition Program Baseline and Acquisition Strategy Report. Press reports state that USD ATL approved the Navy's proposed dual-lead-ship strategy.

## Issues for Congress

**Accuracy Of Cost Estimates.** Although the Navy has substantially increased its estimated DD(X) procurement costs, some analysts believe these costs are still significantly underestimated. The Cost Analysis Improvement Group (CAIG) within the Office of the Secretary of Defense (OSD) reportedly believes that DD(X) procurement costs may be 20% to 33% higher than the new estimates. The CAIG's estimate for the cost of the lead DD(X) might be \$4.1 billion, while its estimate for the fifth DD(X) might be \$3.0 billion. The Congressional Budget Office (CBO) estimates that the lead DD(X) may cost as much as \$4.7 billion, and that the fifth DD(X) may cost \$3.4 billion. CBO has also questioned the accuracy of the Navy's estimate regarding the annual O&S cost of a DD(X) compared to a DDG-51 Aegis destroyer.

**Program Affordability and Cost Effectiveness.** DOD's decision to reduce planned DD(X) procurement to one per year during the period FY2007-FY2011 appears to have been driven in large part by the increase in the Navy's estimates for DD(X)

procurement costs. If DD(X) procurement costs turn out to be closer to the higher CAIG or CBO estimates, this could make it difficult for the Navy to procure one DD(X) or CG(X) per year while still adequately funding other Navy needs, including other Navy shipbuilding programs (such as submarines). The CAIG and CBO cost estimates are at or above cost figures provided by DOD and Navy witnesses as figures that would make the DD(X) unaffordable.

The Navy argues that the DD(X) is more affordable than it appears from looking only at procurement costs, because the ship will have lower O&S costs than existing Navy cruisers and destroyers. Skeptics could argue that reducing a ship's future O&S cost, though desirable, does not make that ship any more affordable to procure in the budget that funds its procurement, that the DD(X)'s lower O&S costs only partially offset its higher procurement costs, and that the DD(X)'s life-cycle O&S cost savings, when calculated on a present-value basis, as required by federal guidelines, are only about half as great as the Navy states. The Navy argues that the DD(X) would be cost effective because the increased costs of the DD(X) would be more than offset by the DD(X)'s improved capabilities. Skeptics can acknowledge these capability improvements but question whether they are worth the ship's cost, particularly if that cost is closer to the CAIG or CBO estimates than to the Navy's estimates.

**Potential Implications for Industrial Base.** The reduction in planned DD(X) procurement to one per year in FY2007-FY2011 is an indication that, unless budget conditions change, DD(X)/CG(X) procurement may never rise above one per year. If DD(X)/CG(X) procurement is limited to one ship per year and the program is divided between the two yards that currently build the Navy's larger surface combatants — the Ingalls shipyard of Pascagoula, MS, which forms part of NGSS and GD/BIW — then the DD(X) program would result in relatively low levels of surface combatant construction work at the two yards. If DD(X) production at some point is consolidated into one yard, the other yard could face a difficult business situation. If the other yard were GD/BIW, which focuses on building surface combatants, theoretical scenarios could include closure and liquidation of the yard, the "mothballing" of the yard or some portion of it, or reorienting the yard into one that focuses on other kinds of work. If the other yard were Ingalls, the continuation of amphibious-ship construction at Ingalls could make the scenarios of closure and liquidation or mothballing less likely, but workloads, revenues, and employment levels could still be reduced from current levels. Another CRS report discusses factors to consider in addressing a potential question about the merits of maintaining two active surface combatant construction yards versus maintaining one.<sup>3</sup>

**Potential Force Levels.** The Navy's early 2005 plan for a fleet of 260 to 325 ships includes a force of 67 to 92 larger surface combatants. If DD(X)s and CG(X)s are procured at a rate of one per year starting in FY2007, and if a total of 23 to 30 DD(X)s and CG(X)s are procured, then by the time that force of 23 to 30 DD(X)s and CG(X)s was fielded (2034 for 23 ships and 2041 for 30 ships), the Navy's force of larger surface combatants could be reduced to 57 to 42 ships. This raises an issue regarding the operational implications of having substantially fewer larger surface combatants than called for in the 260- to 325-ship plan.

---

<sup>3</sup> CRS Report RL32665, *Potential Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, by Ronald O'Rourke.

**Mission Requirements.** The DD(X)'s size and procurement cost appear driven by the ship's total collection of payload elements, which reflect a February 2004 Operational Requirements Document (ORD) for the DD(X). This ORD notwithstanding, skeptics might question whether the DD(X) design fully takes into account other current or planned Navy capabilities. They could argue, for example, that since February 2004, the Navy has increased the planned number of LCSs from an earlier range of 30 to 60 to a new range of 63 to 82 and that GAO reported in November 2004 that there is currently no consensus between the Navy and Marine Corps regarding naval surface fire support requirements. Skeptics might argue that the ORD might not reflect a sufficiently up-to-date consideration of how increasing DD(X) capability (and therefore cost) might reduce DD(X) numbers and therefore reduce the collective capability of the total DD(X) force. A potential question is whether some of the DD(X)'s planned capabilities are more critical than others, and whether the size and cost of the ship might be reduced by reducing the less-critical capabilities.

**Technology Readiness.** The DD(X) will incorporate several significant new technologies. GAO has expressed concerns several times in reports and testimony about whether these technologies will be sufficiently mature in time for the lead DD(X), about the Navy's lack of fallback options for many of these technologies, and about the potential for problems in technology development to add time and cost to the D(X) program. The Navy argues that development of DD(X) technologies is proceeding well, that the new technologies will be sufficiently mature to support the lead DD(X) as currently scheduled, and that allowing more time for further maturing the technologies before proceeding with DD(X) procurement would add time and cost to the DD(X) and other programs.

**Technology Bridge to CG(X) and Other Ships.** The Navy argues that the DD(X) will act as a bridge to the CG(X) because the CG(X) will be based on the DD(X) hull design and use many DD(X) technologies, and that DD(X)/CG(X) technologies will also be used on other future ships. Skeptics could argue that DD(X)/CG(X) technologies could be developed without building any DD(X)s or CG(X)s, or by building a single DD(X) or single CG(X), or one ship of each kind, as integrated technology demonstrators.

**Potential Options for Congress.** Potential options for Congress, some of which can be combined, include the following:

- approve the DD(X) program as proposed by the Navy and supplement the industrial base, if needed, with additional DDG-51s, amphibious ships, transferred LCSs, Aegis ship modernizations, or Deepwater cutters;
- defer procurement of the second DD(X) to FY2008 to permit that ship to benefit from lessons learned in building the first ship;
- procure two or more DD(X)s per year to reduce DD(X) unit procurement costs and better support the industrial base;
- build DD(X)s at a single yard, or build each DD(X) jointly at two yards;
- terminate the DD(X) program now, or after procuring one or two ships as technology demonstrators, and supplement the industrial base with other work; and
- start design work now on a smaller, less expensive alternative to the DD(X)/CG(X) design that preserves core capabilities, and procure this new design, rather than DD(X)s or CG(X)s, starting around FY2011.

## Legislative Activity for FY2006

**Emergency Supplemental for FY2005 (H.R. 1268/P.L. 109-13).** Section 1019 of P.L. 109-13 effectively prohibits a winner-take-all competition to build all DD(X)s. The provision does not prohibit the Navy from shifting to a DD(X) acquisition strategy that somehow involves a second shipyard, even if that involvement were limited, for example, to building only one ship in the DD(X) program.

**FY2006 Defense Authorization Bill (H.R. 1815/S. 1042).** H.R. 1815 as reported by the House Armed Services Committee (H.Rept. 109-89) includes a provision (Section 123) that limits the procurement cost of the “future major surface combatant, destroyer type,” to \$1.7 billion per ship. The provision also directs the Navy to develop an acquisition plan for a future major surface combatant, destroyer type, that uses technologies from the DD(X) and CG(X) programs, is at least as capable as the Navy’s current Arleigh Burke (DDG-51) class Aegis destroyer, and would be ready for lead-ship procurement in FY2011. The bill as reported recommends no FY2006 advance procurement funding for the DD(X) program and reduces the program’s FY2006 research and development request to \$700 million. The bill would also authorize \$2.5 billion for procurement of two additional DDG-51s, to help support the surface combatant industrial base. **S. 1042 as reported by the Senate Armed Services Committee** (S.Rept. 109-69) contains a provision (Section 121) that prohibits a winner-take-all acquisition strategy for the DD(X). The report recommends increasing the DD(X) program’s FY2006 advance procurement funding request by \$50 million, with the additional \$50 million to be used for the second DD(X), and recommends increasing the program’s FY2006 research and development funding request by \$10 million.

**FY2006 Defense Appropriations Bill (H.R. 2863).** The House Appropriations Committee, in its report (H.Rept. 109-119) on H.R. 2863, recommends deleting the \$716 million FY2006 advance procurement funding request for the DD(X) program and rescinding the program’s \$304 million in FY2005 advance procurement funding (page 146); reducing DD(X) FY2006 development to \$670 million; and adding \$50 million in development funding for the CG(X) (page 251). The report states that the DD(X) program “has encountered serious problems” in technology development and increasing unit procurement cost, and that “Considering the uncertainty in this program and the lack of authorization, the Committee believes this program is likely to be restructured, and a new cost and acquisition strategy developed, before proceeding to advance procurement” (page 147). The report states that “Given the age of the current CG — 47 Ticonderoga class [Aegis cruisers] and the potential use of CG(X) to fulfill ballistic missile defense and other missions, the Committee believes it is imperative to accelerate” development work for the CG(X) (page 251). The Senate Appropriations Committee, in its report (S.Rept. 109-141 of September 29, 2005) on H.R. 2863, recommended increasing the DD(X) program’s \$716 million advance procurement funding request by \$50 million (page 124), and the program’s \$1,115 million research and development funding request by \$13 million (pages 194 and 201). Of the additional \$13 million, \$11 million is for permanent magnet motor development work, and \$2 million is for “naval smartships that anticipate and manage.”