

# CRS Report for Congress

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

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### 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 Navy estimates that the first and second DD(X)s would cost more than \$3 billion each to procure and that subsequent DD(X)s would cost \$2.2 billion to \$2.6 billion each to procure. These estimates are substantially higher than last year's estimates. The DD(X)/CG(X) program poses several issues for Congress, including issues related to the program's affordability, cost-effectiveness, and acquisition strategy. For a longer discussion of the DD(X) and CG(X), see CRS Report RL32109.<sup>1</sup> This report will be updated as events warrant.

### Background

The DD(X) destroyer and CG(X) cruiser programs were announced by the Navy in November 2001 as part of a proposed new family of surface combatants that is also to include the small Littoral Combat Ship (LCS).<sup>2</sup> The DD(X) would have a full-load displacement of about 14,000 tons, which would make it roughly 50% larger than the Navy's current 9,000-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 new surface combatant technologies, and would be equipped with two 155-mm (6.1-inch) Advanced Gun Systems (AGSs) and 80 missile tubes for Tomahawk cruise missiles and other weapons. 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 than the Navy's current cruisers and destroyers.

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<sup>1</sup> CRS Report RL32109, *Navy DD(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 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).

The Navy says it has a requirement for eight to 12 DD(X)s. The FY2006-FY2011 Future Years Defense Plan (FYDP) reduces planned DD(X) procurement to one per year for FY2007-FY2011 and accelerates 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) has increased from about \$2.8 billion to \$3,291 million, or about 18%. The estimate for the second DD(X) has increased from \$2,053 million to \$3,061 million, or about 49%. The estimates for subsequent DD(X)s have increased from about \$1.5 billion and \$1.8 billion each to about \$2.2 billion to \$2.6 billion each, or roughly 45%. 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. A meeting scheduled for April 29, 2005, to grant the DD(X) approval “Milestone B” approval to proceed was postponed, reportedly because of disagreement between the Navy and CAIG over estimated DD(X) procurement costs.

Until recently, 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 General Dynamics’ Bath Iron Works (GD/BIW) of Bath, ME, as well as Lockheed Martin, United Defense, and several other companies. Under the Navy’s DD(X) acquisition strategy of record, which was approved by DOD in February 2004, the first DD(X) would be built by NGSS, the second DD(X) 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 DD(X) 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.

**Table 1** shows funding for the DD(X) and CG(X) programs 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.

## Issues For Congress

**DD(X) Numerical Requirement.** The Navy has not explained why the required number of DD(X)s has declined by 50%, from an earlier envisaged range of 16 to 24 to the current range of eight to 12. To what degree was this reduction driven by affordability considerations rather than changes in operational requirements? In light of current ambiguity in Navy planning regarding the future size and structure of the fleet,<sup>3</sup> what is the chance the Navy might change this figure again?

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

**DD(X)/CG(X) Affordability And Cost Effectiveness.** Given the recent substantial increase in estimated DD(X) procurement costs, would the DD(X)/CG(X) program be affordable and cost effective? The decision to reduce DD(X) procurement to one per year in FY2007-FY2011, which appears to have been driven in large part by affordability considerations, suggests that, unless budget conditions change, the Navy may never be able to afford to procure more than one DD(X) or CG(X) per year. A one-per-year DD(X)/CG(X) procurement rate, if sustained for a period of many years, might not be enough to introduce the planned new DD(X)/CG(X) technologies into the fleet in sufficient numbers. The prospect of a one-per-year rate might also raise questions about the potential cost effectiveness of the DD(X)/CG(X) effort when measured in terms of average unit acquisition cost, which is the average cost to develop and procure each ship. Given the \$10 billion dollars in research and development funding programmed for the DD(X)/CG(X) effort, if DD(X)s or CG(X)s are procured at a rate of one per year, the average acquisition cost for each DD(X) or CG(X) could be more than \$3 billion. Supporters could argue that even if unit acquisition cost has increased, the low annual operating and support costs of the DD(X) and CG(X) would keep the DD(X)/CG(X) effort cost effective when measured in terms of total ownership cost, which is the sum of acquisition cost plus life-cycle operating and support costs.

**DD(X) Naval Surface Fire Support Mission.** The size and cost of the DD(X) reflects in part the presence on the ship of the two AGSs, which in turn reflects a Navy desire to increase the fleet's naval surface fire support (NSFS) capability. A November 2004 Government Accountability Office (GAO) report concluded that "The Navy and Marine Corps have only recently begun the process to establish validated NSFS requirements that address the overall capabilities needed and the balance between different systems that will be required to provide effective, continuous, and sustaining support fire for forces operating ashore."<sup>4</sup>

**Readiness of New DD(X) Technologies.** GAO has issued a series of reports expressing concern about the readiness of several of the new technologies intended for the DD(X) and about the Navy's fall-back plans in the event that one or more of them do not mature in time to support the Navy's lead-ship construction schedule.<sup>5</sup> The Navy argues that it has taken steps to ensure that the new technologies will be ready for the lead DD(X), including the use of land-based engineering design models (EDMs) for verifying new technologies, and increased levels of development funding.

**CG(X) Missile-Defense Mission.** CG(X) supporters argue that the ship will be cost-effective in part because of its missile-defense capabilities, which include its powerful radar and its ability to fire missile-defense interceptors. Skeptics could argue that this radar could be incorporated into a new-design surface combatant that could be smaller than the CG(X) and thus affordable in larger numbers, and that both this smaller surface combatant and other Navy ships could fire missile-defense interceptors.

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<sup>4</sup> Government Accountability Office, *Information on Options for Naval Surface Fire Support*, GAO-05-39R, Nov. 2004, p. 2.

<sup>5</sup> See, for example, Government Accountability Office, *Progress of the DD(X) Destroyer Program*, GAO-05-752R, June 14, 2005, and Government Accountability Office, *DEFENSE ACQUISITIONS: Assessments of Selected Major Weapon Programs*, GAO-05-301, Mar. 2005, pp. 47-48.

**Acquisition Strategy and Shipbuilding Industrial Base.** Some observers are concerned that a one-per-year DD(X)/CG(X) procurement rate would not provide enough work to maintain the financial health of both NGSS and GD/BIW, and that a DD(X) acquisition strategy involving only one yard could have serious consequences for the other yard, particularly if it is GD/BIW. Options for providing additional work for NGSS and GD/BIW in FY2006-FY2011 include procuring additional DD(X)s, Arleigh Burke (DDG-51) class Aegis destroyers, or amphibious ships; transferring production of LCSs to NGSS or GD/BIW; modernizing Aegis cruisers and destroyers (perhaps more extensively than planned by the Navy); and expanding and accelerating procurement of new cutters under the Coast Guard's Deepwater acquisition program.<sup>6</sup> An option for supporting NGSS and GD/BIW in FY2011 and beyond, particularly as a hedge against the possibility the DD(X)/CG(X) program is terminated on affordability or cost effectiveness grounds, would be to start design work now on a less expensive surface combatant that might be ready for lead-ship procurement in FY2011. Compared to the DD(X)/CG(X) design, such a ship, which might displace about 9,000 tons, might be more easily affordable within available resources at a rate of two per year. A two-per-year rate might introduce new technologies into the fleet in more sufficient numbers, and be easier to divide between two shipyards.

**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;
- accelerate procurement of the lead DD(X) to FY2006 and the second DD(X) to FY2007 to better support the industrial base;
- defer procurement of the lead DD(X) to FY2008 to provide more time for maturation of key technologies;
- 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 additional DDG-51s, amphibious ships, transferred LCSs, Aegis ship modernizations, or Deepwater cutters;
- start design work now on a smaller, less expensive alternative to the DD(X)/CG(X) design — such as a ship about the same size as today's 9,000-ton Aegis cruisers and destroyers — 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 the Emergency Supplemental Appropriations Act for 2005 (H.R. 1268/P.L. 109-13) effectively prohibits a winner-take-all competition to build all DD(X)s. The provision

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<sup>6</sup> For more on the Deepwater program, see CRS Report RS21019, *Coast Guard Deepwater Program: Background and Issues for Congress*, by Ronald O'Rourke.

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).** The FY2006 defense authorization bill (**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. Since the current DD(X) design likely could not be built for \$1.7 billion, at least not without removing most or all of the ship’s planned combat-related equipment, Section 123 would effectively restructure the DD(X) program into an effort aimed at developing a new surface combatant design that could meet the \$1.7-billion cost limit. Such a ship would likely be smaller than the DD(X) and be less capable in some respects than the DD(X). With a capability at least equal to that of the DDG-51 design, however, it would still have a substantial capability. 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.

The FY2006 defense authorization bill (**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 of June 10, 2005) 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, “consistent with the recommendations of the House in H.R. 1815” (page 146); reducing DD(X) FY2006 research and development to \$670 million; and adding \$50 million in FY2006 research and development funding for the CG(X) program (page 251). The report states that the DD(X) program “has encountered serious problems” in terms of 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 also 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” concept studies, concept design, and other development work for the CG(X) (page 251).