

An hourglass-shaped graphic with a globe inside. The top bulb is dark blue, and the bottom bulb is light blue. The globe is centered in the narrow neck of the hourglass. The text is centered within the hourglass.

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Metric Conversion and the Federal Role: An Update

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Abstract. This report provides a brief history and update of federal metric conversion activities. Particular focus is given to requirements for metric products in federal construction, and to the Federal Highway Administration's efforts to convert federal highways to the metric system. Legislation in the 104th Congress related to metric conversion is reviewed.

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Metric Conversion and the Federal Role: An Update

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Summary

The United States remains the only major industrialized country in which a nonmetric measurement system is predominantly employed. Section 5164 of the Omnibus Trade and Competitiveness Act of 1988 (P.L. 100-418) amended the Metric Conversion Act to require federal agencies to use the metric system in their activities. Legislation in the 104th and 105th Congress limits federal metric conversion activities, particularly in instances where states, local governments, and the private sector may be required to convert to the metric system in order to participate in federally funded programs.

Background

The United States remains the only major industrialized country in which a nonmetric measurement system is predominantly employed. Thus, while miles, pounds, and degrees Fahrenheit (i.e., the English system of measurement) are widely used in the United States, kilometers, grams, and degrees Celsius are favored throughout the rest of the industrialized world.

Voluntary use of the metric system, also known as the International System of Units or SI, has been legal in the United States since 1866, and certain segments of society (particularly scientists and industries involved in international trade) have embraced metric units for many years. Calls for widespread metric conversion intensified during the mid-1960s, particularly after the United Kingdom began its conversion from the English system to metric. In 1968, Congress passed the Metric Study Act of 1968 (P.L. 90-472) which authorized a 3-year Department of Commerce study on the feasibility of metric conversion in the United States. The study concluded that conversion to the metric system was in the best interests of the Nation, particularly in view of the increasing importance of technology and international trade to the U.S. economy.

In 1975, the Metric Conversion Act (P.L. 94-168) was passed by Congress. The Act established a U.S. Metric Board whose purpose was to coordinate and plan a process of

voluntary metric conversion throughout the Nation. However, there appeared to be widespread public antipathy to conversion to the metric system and the Metric Board's efforts were largely ignored (and in some instances, vociferously opposed) by the American public. In 1982, the Metric Board was abolished by the Reagan Administration.

By the late 1980s, however, concern over U.S. industrial competitiveness in world markets led Congress to again encourage metric conversion, this time by requiring federal agencies to go metric in their respective activities. Section 5164 of the Omnibus Trade and Competitiveness Act of 1988 (P.L. 100-418) amended the Metric Conversion Act of 1975 to designate the metric system as the "preferred system of weights and measures for United States trade and commerce." The amended Act required all federal agencies to begin using the metric system in procurements, grants, and other business-related activities, except when such use is impractical or is likely to cause significant inefficiencies or loss of markets to U.S. firms. Agencies were also required to report annually to Congress on actions taken to implement fully the metric system of measurement.¹ As follow-up to P.L. 100-418, Executive Order 12770 ("Metric Usage in Federal Government Programs"), issued in 1991 by President Bush, further required federal agencies to formulate and implement metric conversion plans.

Federal Agency Metric Conversion Activities

Federal agencies were initially slow in responding to the metric conversion mandate. A March 1990 General Accounting Office (GAO) report found that most federal agencies had not shown a commitment to metric conversion.² After Executive Order 12770 was issued, agency compliance measurably improved. A Committee Print issued December 1993 by the House Committee on Science, Space and Technology, reported that 29 out of 36 federal agencies had reported their metric activities to Congress (as required by P.L. 100-418). The study concluded that a "general commitment toward converting to the metric system by each federal government agency reporting appears clearly evident."³ Meanwhile, a January 1994 GAO report on metric conversion found that while federal preparations for metric conversion were well underway, basic problems limited federal metric procurement; grants and other business activities showed mixed progress; and federal agencies indicated a need for greater support from the private sector and the public.⁴

¹This requirement has been repealed by P.L. 104-66, the Federal Reports Elimination and Sunset Act of 1995.

² U.S. General Accounting Office. Metric Conversion: Plans, Progress, and Problems in the Federal Government. Report to the Chairman, Committee on Science, Space, and Technology, House of Representatives. (GAO/RCED-90-131) Washington, D.C., Mar. 1990. 45 p.

³ U.S. Congress. House. Committee on Science, Space and Technology. Prepared by the Congressional Research Service for the Subcommittee on Technology, Environment and Aviation. Metric Conversion Activities in Federal Government Agencies Pursuant to P.L. 100-418, Section 5164, Metric Usage: Background Information and 1993 Status. Committee Print, 103d Cong., 1st Sess. Washington, U.S. Govt. Print. Off., 1993. p. 28.

⁴ U.S. General Accounting Office. Metric Conversion: Future Progress Depends upon Private Sector and Public Support. Report to the Congress by the Comptroller General of the United States. GAO/RCED-94-23, Jan. 13, 1994. Washington, (continued...)

The Metric Program at the Department of Commerce's National Institute of Standards and Technology (NIST) is responsible for coordinating the metric transition activities of all federal agencies. NIST chairs the Interagency Committee on Metric Policy (ICMP) and is required by Executive Order 12770 to report to the President annually regarding metric conversion progress made by individual federal agencies. The most recent report, the 1993 Metric Progress Report, concluded that metric conversion progress among agencies is widely variable, and depends upon the metric readiness of the industries a particular agency's programs affect, budget limitations, and the amount of visible high level leadership within the agency.⁵

Notable examples of metric conversion activities in the federal government include: the proposed metric conversion of federal highways (discussed below), a requirement that all new federal building construction projects be conducted in metric units, and a Federal Trade Commission (FTC) rule requiring consumer product packaging to be labeled with dual (English and metric) units.⁶ Other agencies, however, have determined it unfeasible or unpractical to convert particular activities to metric at this time. The GAO found that "[metric conversion] problems encountered by federal agencies frequently involve opposition from the private sector or the public. Generally speaking, the more directly a proposed conversion affects the private sector or the public, the greater the resistance."⁷ Thus, for example, the Secretary of Agriculture has granted a general exemption from metric conversion for projects or programs that directly affect individual farmers or farm programs. The National Weather Service in the Department of Commerce, while gathering all of its data in metric units, converts back to the inch-pound system before providing its data to the public.

Proposed Metric Conversion of Federal Highways. An issue that has received much attention from congressional policy makers and the public is the proposed metric conversion of the federal highway system. On June 11, 1992, the Federal Highway Administration (FHWA) announced its metric conversion policy, which stipulated that all highway construction plans, specifications, and estimates be prepared in metric units of measurement by September 30, 1996.⁸ After that date, Federal Aid Highway Program funds would not be authorized for nonmetric projects, unless a specific exception was

⁴ (...continued)
1994. p. 3-6.

⁵ U.S. Dept. of Commerce. Metric Progress. Annual Report Submitted to the President by the Secretary of Commerce as Required by Executive Order No. 12770. Oct. 1, 1993. p. 2.

⁶ The Fair Packaging and Labeling Act (15 U.S.C. 1451 *et seq*) was amended on August 3, 1992, to designate the use of both English (inch-pound) and metric units on most package labels. The FTC and the Food and Drug Administration (FDA) are directed to implement this law. The FTC's final rule went into effect February 14, 1994 (see: Federal Register, v. 59, no. 8, Jan. 12, 1994. p. 1861). The proposed FDA rule is still pending (see: Federal Register, v. 58, no. 243, Dec. 21, 1993. p. 67443).

⁷ Metric Conversion: Future Progress Depends upon Private Sector and Public Support, p. 50.

⁸ U.S. Dept. of Transportation. Federal Highway Administration. Metric Conversion Policy. Federal Register, v. 57, no. 113, June 11, 1992. p. 24843.

issued by FHWA.⁹ Many state highway agencies have been working with FHWA and the American Association of State Highway & Transportation Officials (AASHTO) to meet the September 30, 1996, deadline for metric conversion. However, on November 28, 1995, the President signed the National Highway System Designation Act of 1995 (P.L. 104-59), which provides that before September 30, 2000, the Secretary of Transportation shall not require any state to use or plan to use the metric system with respect to designing or advertising, or preparing plans, specifications, estimates or other documents for a federal-aid highway project. Legislation introduced into the 104th Congress by Representative Duncan (H.R. 3617), and reintroduced into the 105th Congress by Representative Bachus (H.R. 813) and Senator Baucus (S. 532) would indefinitely remove the federal mandate for metric conversion in federal highway projects (see discussion in next section of this report).

The issue of highway sign conversion was considered separately from FHWA's overall metric conversion policy, and was not subject to the September 30, 1996 deadline. On August 31, 1993, the FHWA announced in the *Federal Register* a solicitation of public comments on options it was considering for "coordinating an orderly transition of distance, weight, and speed traffic control sign legends from English to metric units."¹⁰ In response to the FHWA notice, a series of bills were introduced in Congress which sought to prohibit the use of federal funds for metric conversion of highway signs. Additionally, Department of Transportation Appropriation bills for FY1994 (P.L. 103-122), FY1995 (P.L. 103-331), and FY1996 (P.L. 104-50) specifically prohibited use of appropriated funds for metric conversion of highway signs.

On June 27, 1994, the FHWA announced its decision in the *Federal Register* not to require the implementation of metric signs until "at least after 1996, or until further indication of the intention of Congress on this subject is received."¹¹ The FHWA stated that one of the factors in its decision was "a possible future congressional restriction on using Federal funds for metric signs." Accordingly, the National Highway System Designation Act of 1995 (P.L. 104-59) prohibits FHWA from requiring the states to expend any federal or state funds for metric conversion of highway signs. Meanwhile, an April 1996 Battelle study commissioned by FHWA has estimated that the cost of metric highway sign conversion could range from \$15.6 million for routine replacement, to \$826 million for dual posting.

Metric Legislation in the 104th and 105th Congress

Similar to the metric provisions of the National Highway System Designation Act, much of the metric-related legislation introduced in the 104th Congress sought to limit metric conversion activities in the federal government, particularly in cases where the federal government is seen to be imposing metric conversion mandates on the States.

⁹ To date, the FHWA has granted exceptions for over one thousand construction projects.

¹⁰ U.S. Dept. of Transportation. Federal Highway Administration. Metric Conversion of Traffic Control Signs; Notice. Federal Register, v. 58, no. 167, Aug. 31, 1993. p. 46036.

¹¹ U.S. Dept. of Transportation. Federal Highway Administration. Options for Coordinating the Metric Conversion of Traffic Control Signs. Federal Register, v. 59, no. 122, June 27, 1994. p. 33037.

Section 302 of the Unfunded Mandate Reform Act of 1995 (P.L. 104-4), signed into law on March 22, 1995, directed the Advisory Commission on Intergovernmental Relations (ACIR) to study specific federal mandates, including "requirements of the departments, agencies, and other entities of the federal government that state, local, and tribal governments utilize metric systems of measurement."

On January 24, 1996, the ACIR issued its preliminary report on federal mandates. The Commission identified FHWA metric conversion requirements for federal highway construction as a federal mandate, and recommended the repeal of "requirements that state and local governments convert to metric on a Federal timetable as a condition of receiving Federal aid."¹² Metric proponents have objected to the ACIR findings, asserting that metric conversion has already been implemented by most states, that the metric system is becoming increasingly accepted by the construction community, and that metric conversion costs constitute a tiny percentage of total federal highway funds received.

Other legislation in the 104th Congress sought to amend the Metric Conversion Act. The Federal Reports Elimination and Sunset Act of 1995 (P.L. 104-66), which was signed into law on December 21, 1995, repeals section 12 of the Metric Conversion Act requiring federal agencies to report to the Congress on their metric conversion activities. A further amendment to the Metric Conversion Act was included in Department of Commerce dismantling legislation, which was attached to the House version of the debt limit extension bill (H.R. 2586, subsequently vetoed by the President). This provision would have repealed the provision of the Metric Conversion Act which requires federal agencies to use the metric system in their procurements, grants, and other business-related activities. Additionally, the Metric Program at NIST would have been abolished.

Finally, a bill passed by the 104th Congress (P.L. 104-289) sought to curb some federal agency requirements that businesses convert their modular construction products¹³ to a hard metric specification in order to supply federal construction contracts. While the vast majority of products procured for federal construction are soft converted (which means that an existing product is relabeled in metric units but does not change size), some modular products are required in hard metric sizes in order to be dimensionally coordinated with other building components. A hard metric conversion requires, in addition to the expression of the dimensions of a product in metric units, a physical change in the dimension of that product in order to conform to a rounded metric unit. Certain construction materials industries (primarily makers of concrete masonry block and recessed lighting fixtures) objected to hard metric requirements, arguing instead for soft metric conversion.

The Savings in Construction Act of 1996 (P.L. 104-289), signed into law on October 11, 1996, applies only to concrete masonry units and recessed lighting fixtures. The law prohibits federal agencies from specifying hard metric dimensions for concrete block and lighting fixtures, *unless* certain criteria are met, including a determination by the agency

¹² U.S. Advisory Commission on Intergovernmental Relations. The Role of Federal Mandates in Intergovernmental Relations. Preliminary report. January 1996. p. 9.

¹³ Modular construction products are components which must "fit together" with each other as specified in an architectural design. Examples include: brick, concrete masonry block, suspended ceiling components, raised flooring components, and sheet goods.

that the costs of the modular metric components are estimated to be equal to or less than the total installed price of using non-hard metric products. Additionally, P.L. 104-289 directs each executive agency awarding construction contracts to designate a metrication ombudsman who will respond to industry complaints and concerns regarding construction metrication issues.

In the 105th Congress, metric related legislation remains focused on the federal highway construction issue. H.R. 813 (introduced by Representative Bachus) would remove the extended deadline of September 30, 2000 from the National Highway System Designation Act (P.L. 104-59), thereby indefinitely prohibiting FHWA from requiring the states to convert their federal highway projects to metric units. Section 303 of the Surface Transportation Authorization and Regulatory Streamlining Act (S. 532, introduced by Senator Baucus), contains identical language. Similarly, there are plans in the House to attach such language to legislation reauthorizing the Intermodal Surface Transportation Efficiency Act (ISTEA).¹⁴ Proponents of removing the federal mandate for metric conversion cite the costs of conversion experienced by highway contractors, and maintain that metric conversion decisions should be left to the states. Opponents of H.R. 813, including the Department of Transportation, point out that over 40 states are already surveying and designing their new projects in metric units, and that states have spent nearly \$71 million to convert standard plans, specifications, and computer programs. Removing the federal mandate, they argue, would create confusion in the highway construction industry, and reverse progress that most states have already made in converting to the metric system.

¹⁴ See: Statement of Representative John Duncan. Congressional Record. House. May 14, 1997. p. H2650-1.