

Target: \$27 Billion - The 1955 Estimate

Series: FHWA Highway History Website Articles

June 2023



U.S. Department of Transportation
Federal Highway Administration
1200 New Jersey Ave, SE
Washington, DC 20590

The original format of this document was an active HTML page(s) located under <https://www.fhwa.dot.gov/infrastructure/history.cfm>. The Federal Highway Administration converted the HTML page(s) into an Adobe® Acrobat® PDF file to preserve and support reuse of the information it contained.

The intellectual content of this PDF is an authentic capture of the original HTML file. Hyperlinks and other functions of the HTML webpage may have been lost, and this version of the content may not fully work with screen reading software.

Target: \$27 Billion - The 1955 Estimate

On March 25, 1955, Secretary of Commerce Sinclair Weeks released the U.S. Bureau of Public Roads (BPR) report on *Needs of the Highway Systems, 1955-1984*, as requested by Section 13 of the Federal-Aid Highway Act of 1954. The report covered all highway needs, but its estimate of the cost of the Interstate System was the estimate used by the Clay Committee, the Governors Conference, and Congress during the debates in 1955 and 1956. Because of its importance, the estimate is worth looking at it in some detail.

The Federal-Aid Highway Act of 1944 authorized designation of a 40,000-mile National System of Interstate Highways, as it was originally called. On August 2, 1947, the first 37,700 miles of the Interstate System had been designated (33,300 miles in rural areas and 4,400 in urban areas). The 1955 needs report covered only this 37,700 miles. The remaining total of 2,300 miles that had not been designated was, of course, not covered. Most of the undesignated mileage would be in urban areas. The BPR's estimate also could not account for the 1,000 miles added by the Federal-Aid Highway Act of 1956.

The estimate is based on midyear 1954 prices, a period when the country was emerging from a mild recession. It covered construction over a 10-year period to make the 37,700-mile network structurally adequate with sufficient lane width for expected traffic in 1974 based on the standards in use at the time (described below). In addition, the mileage was to serve adequately for 30 to 40 years from the date of construction. The BPR assumed that most Interstate construction in rural areas would involve upgrading, improving, and rebuilding existing roads, rather than construction on new location.

- The BPR estimated that about 15 percent of the designated mileage was adequate according to the standards used for the study.
- About 28,000 miles would be four-lane divided highways, while about 2,300 miles, mainly in urban areas, would have six or more lanes.
- For about 7,000 miles in rural areas, two lanes would be satisfactory.

In sum, BPR estimated that the cost of building the Interstate System, as defined, would be \$23.2 billion.

Rural: \$12.5 billion

Urban: \$10.7 billion

The report made clear what these amounts covered:

This estimate provides for the development of the Interstate System in its present designated extent of 37,700 miles. It does not take into account extensions which will undoubtedly be made within the legislative limitation of 40,000 miles—extensions which will in all probability be almost entirely within and adjacent to the larger urban areas. Estimates of the needs for improvement of these extensions must necessarily await their designation.

Moreover, this estimate covered only the period from 1955 to 1964. Beyond 1964, additional costs would be incurred for upgrading to meet travel demands. As the report noted, "There is no foreseeable period in the future when there will be no highway needs."

The Clay Committee assumed additional urban feeder and distribution routes would be needed. Because the BPR had not estimated the cost of this mileage, the Committee arranged for estimates to be prepared in several representative metropolitan communities. Based on this sample, the Committee concluded that "a desirable improvement program for

the interstate network should include certain of these urban arterials." On that assumption, the Committee made its estimate:

Accordingly, the Committee in its appraisal of needs has included \$4 billion as an amount to be assigned for this work over a 10-year period. This is intended to provide only for the most important connecting roads and is not intended to meet the total needs in this category.

Adding the BPR's and Committee's estimates, the total came to \$27.2 billion. As debate continued on the National Highway Program in 1955 and 1956, all parties were trying to find a way to fund a \$27 billion Interstate Highway Program over 10 years, having lost sight of the limitations of the estimate.

The 1945 Design Standards

President Franklin D. Roosevelt signed the Federal-Aid Highway Act of 1944 on December 20, 1944. Section 7 of the Act authorized designation of the 40,000-mile National System of Interstate Highways. This network was based on concepts described in a report by the President's National Interregional Highway Committee, largely prepared by the Public Roads Administration (PRA), as BPR was called in the 1940's.

Shortly after the 1944 Act became law, the PRA worked with the American Association of State Highway Officials' (AASHO) Special Committee on Planning and Design Policies to develop design standards for the Interstate System. The PRA's annual report for 1945 summarized the goal:

There was no thought of requiring that every mile of the system be built according to a rigid pattern but it was believed essential that there be a high degree of uniformity where conditions as to traffic, population density, topography, and other factors are similar.

The committee met in Washington on June 18 and 20, 1945. After considering the comments received from the States, the committee adopted standards for design of the Interstate System. The PRA concurred in the committee's action, after which the standards were referred to the States for consideration. The design standards were adopted by AASHO on August 1, 1945.

The approved standards were based on the illustrative standards in the 1944 report on *Interregional Highways*. In general, the 1945 standards were intended to "represent the best practice in the light of present knowledge." The standards called for:

- The Interstate System would be designed for the mix of traffic expected 20 years from the date of construction.
- Full control of access would be provided where State law permitted it. In other States, additional right-of-way should be obtained to provide for construction of frontage roads to provide the required access from abutting properties.
- In most cases, railroad crossings of the Interstate System should be on structures. However, where the railroad operates five or less regular train movements at a crossing, separation of grades should be provided only if justified by an economic analysis. Where separation is not justified, adequate warning devices should be installed.
- Similarly, on Interstate routes carrying 3,000 or more vehicles a day, every effort should be made to separate cross traffic. For Interstate routes with lower traffic density, grade separation should be provided when justified by an economic analysis. When grade separation is not provided at a cross road, traffic signal control installations, channelized intersections, or stop control on the crossroad shall be provided.
- Design speed varied based on location. In flat topography, rural segments should have a minimum design speed of 60 and a desirable design speed of 70; in rolling topography, 50 and 60, respectively; and in mountainous topography, 40 and 50. All urban sections should have a minimum design speed of 40, with a desirable design speed of 50.
- Two-lane sections were permitted on lightly traveled rural segments. To increase capacity, sight distance should be sufficient to permit passing on as much of the highway as possible.

Advocates of "superhighways" criticized the adopted standards because they were not grandiose enough or comparable to the standards used on parkways and turnpikes. The committee, however, assumed that even for the Interstate System, design should be based on "the highest standards commensurate with traffic needs." Joseph Barnett, who represented the PRA on the AASHO committee, would later explain the committee's view:

Except for the fact that interstate highways constitute links in a national system and are given priority due to their importance for long-distance transportation and the national defense, their design should not be materially different from that of any other road carrying a comparable volume and kind of traffic.

Based on this view, the committee agreed to allow two-lane sections of the Interstate System. (Barnett commented: "It may come as a surprise to some that there will be a considerable mileage of two-lane roads on the interstate system.")

The idea of permitting at-grade crossings was also criticized. Barnett responded that, "The redeeming feature is the requirement for acquiring the right-of-way for future separations at once so that they can be provided readily when accident or delay experience proves they are needed."

The 1956 Standards

The Federal-Aid Highway Act of 1956 included a provision on standards:

The geometric and construction standards to be adopted for the Interstate System shall be those approved by the Secretary of Commerce in cooperation with the State highway departments. Such standards shall be adequate to accommodate the types and volumes of traffic forecast for the year 1975.^[1]

The BPR and AASHO's Planning and Design Policy Committee had begun work on new minimum standards for the Interstate System in May. The Committee completed the draft standards during a meeting in Kansas City on June 29, the same day President Eisenhower signed the 1956 Act.

Following enactment of the legislation, AASHO President Rex Whitton of Missouri called a special AASHO meeting in Chicago on July 12 and 13. Commissioner C. D. "Cap" Curtiss and BPR staff attended the meeting.

On July 11-the 40th anniversary of the Federal Aid Road Act of 1916-the AASHO Executive Committee discussed the legislation and reviewed the proposed design standards developed by the Planning and Design Policy Committee. After some editing, the Executive Committee referred the standards to the Chief Administrative Officers of the State highway agencies for consideration. They met on July 12. First, the 1956 Act was read and explained section by section. Then they discussed the proposed Interstate design standards. Alfred E. Johnson, AASHO's Executive Secretary, explained the process:

President Whitton allowed all to speak who desired but permitted only the person with the authority to vote for the member department to place motions before the meeting. At the roll call, each department was requested to name the person voting for the department.

Voting on the proposed design standards was accomplished by a show of hands as each section was discussed. After all sections were voted upon by this procedure, a roll call vote, for the record, was taken upon the adoption of the whole design standards.

The Bureau of Public Roads, as per custom and policy, did not vote. The formal vote was 47 in the affirmative for the adoption, with three departments registering minor qualifications, two dealing with access control features, and one regarding barriers in the median.

The standards were submitted formally to the BPR on July 16 for concurrence and approval. The formal approval occurred on July 17, with the concurrence of Secretary of Commerce Sinclair Weeks. Some of the elements were:

- Nearly all of the System would consist of divided highways with four or more 12-foot lanes.
- Where the projected 1975 design hourly volume is below 700, the highway would be a two-lane highway.^[2] The roadway would be built to one side of the right-of-way so an additional pavement to provide for a divided highway can be provided when needed.
- Design speeds would vary for mountainous (50 mph), rolling (60 mph), or flat terrain (70 mph).
- Access would be controlled on all segments, with cross roads generally carried over or under the routes.
- In sparsely settled rural areas of the West where traffic volumes were low, intersections at grade would be permitted in some cases.
- No railroad grade crossings would be permitted.
- Medians in rural areas in flat and rolling topography would be at least 36 feet wide. Medians in urban and mountainous areas would be at least 16 feet wide. Narrower medians may be provided in urban areas of high right-of-way cost, on long and costly bridges, and in rugged mountainous terrain, but no median shall be less than 4 feet wide.
- Curbs or other devices may be used where necessary to prevent traffic from crossing the median.
- Where continuous barrier curbs are used on narrow medians, such curbs shall be offset at least 1 foot from the edge of the through-traffic lane.
- Bridges and overpasses would preferably be built without overhead obstructions, but all structures will allow at least 14 feet of vertical clearance over the roadways and shoulders.^[3]

The 1959 Estimate

The original estimate of \$27 billion has been criticized over the years because it was far from the final construction cost of about \$129 billion—an overrun of 5 times the original estimate! The BPR's original estimate was reasonable based on what it measured and the design standards in effect at the time. Clearly, the Clay Committee vastly underestimated the cost of the urban Interstate segments.

The Federal-Aid Highway Act of 1956 called for periodic Interstate Cost Estimates. They would be used to calculate an apportionment factor for distributing Interstate Construction (IC) funds among the States on the basis of relative need. The apportionment factor was intended to ensure the System would proceed in each State at about the same pace.

The first estimate was submitted to Congress in 1958. It covered only 38,548 miles of the 41,000-mile System authorized by Congress. The 1956 Act, which had authorized an additional 1,000 miles for the System, specifically excluded this mileage from the estimate. The estimate was based on the new and higher design standards adopted for the Interstate System in 1956. The total estimated cost of the mileage covered by the 1958 report was \$37.6 billion.

The 1959 Supplemental Estimate

In July 1959, during hearings before the House Ways and Means Committee, BPR supplemented the 1958 report with an estimate covering the remaining mileage. The total came to \$41 billion for 41,000 miles. This estimate did not cover State highway planning and research or BPR administrative costs, both of which were charged against IC authorizations. These costs would be included in later estimates.

Many factors would increase the cost over the years, particularly inflation; added mileage, including 1,500 miles added by the Federal-Aid Highway Act of 1968; upgraded standards to meet safety, operational, and environmental needs; right-of-way costs, especially in urban areas; and changes in the way Interstate highways were located, designed, and constructed. However, considering the factors the BPR could not have known at the time, the 1958-1959 estimate was reasonably accurate.

1. To prevent premature obsolescence of the System, the Federal-Aid Highway Amendments of 1963 changed the statutory design year to provide a design requirement for traffic service adequate for a 20-year period commencing on the date of plan approval. [\[return to text\]](#)

2. The Federal-Aid Highway Act of 1966 provided that, "Such standards shall in all cases provide for at least four lanes of traffic." [\[return to text\]](#)
 3. In January 1960, after consultation with the Department of Defense, BPR issued an order requiring a 16-foot vertical clearance. [\[return to text\]](#)
-