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State of California

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of the
GOVERNOR'S TASK FORCE

on the
ACREAGE LIMITATION PROBLEM

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January 4, 1968

The Honorable Ronald Reagan
Governor of California
State Capitol
Sacramento, California 95814

Acreage Limitation Task Force

Dear Governor Reagan:

This Task Force was appointed by you in April, 1967 to formulate and submit to you recommendations for possible modification of the acreage limitation provisions of Federal Reclamation Law. The members of the Task Force are Richard D. Andrews of Fresno, Burnham Enersen of San Francisco, William H. Jennings of San Diego, James F. Sorensen of Visalia, and Breckinridge Thomas of Fresno.

After careful study and consideration of the matter, in the course of which we have enjoyed the excellent cooperation and assistance of Director William R. Gianelli and Chief Counsel P. A. Towner of the Department of Water Resources, Director Earl Coke and Economic Advisor Elmer W. Braun of the Department of Agriculture, and Professor of Agricultural Economics J. Herbert Snyder of the University of California at Davis, together with several of their colleagues, we have concluded our assignment and submit this report, which is unanimous.

The Basic Law

The basic Reclamation Law was adopted by the Congress upon recommendation of President Theodore Roosevelt in 1902 for the primary purpose of encouraging and facilitating the settlement and development of the vast areas of public lands in the semi-arid regions of the Western States (Act of June 17, 1902, 32 Stat. 388, 43 U.S. Code 391). The act provided for the development of irrigation water supplies and for the sale of such water to the settlers on the land.

Taking a precedent from the homestead laws, the act provided that no person could make an entry upon public land within any reclamation project in excess of the limit, to be established by the Secretary, representing "* * * the acreage which, in the opinion of the Secretary, may be reasonably required for the support of a family" (§ 4). The Secretary was also required to establish the amount of the charges to be paid by the entrymen and private landowners in not exceeding ten annual installments so as to return to the reclamation fund the estimated cost of the construction of the project (§ 4). (The ten years have since been increased to forty years [43 U.S. Code 485b], plus a ten-year development period [43 U.S. Code 485f].) There was no provision for the payment of interest, and none is charged, upon the deferred installments. Section 5 of the act provided, among other things, that privately held land within a project area could not receive a right to use

water for more than 160 acres in any one ownership.

Thus, the essence of the provisions of the 1902 Act with regard to private land was that the private landowner could obtain water for no more than 160 acres from the project, and in return he was obligated to pay his share of the construction costs in interest-free annual installments over a period of years. It has frequently been said that the interest-free financing of construction costs represented a governmental subsidy in favor of the private landowner. The 160-acre limitation provision confined the enjoyment of this subsidy to tracts of not more than 160 acres in a single ownership. The acreage limitation as applied to private lands was the quid pro quo for the financial assistance afforded by the freedom from an interest burden on the deferred installments of the repayment obligation.

Another provision, added several years later but itself now ancient, is that, regardless of whether it has ever received Federal project water in the past, land in excess of 160 acres per owner within a Reclamation project loses any right to receive project water when sold, before one-half of the construction charges against such land are fully paid, if the sale price of the land is not specifically approved by the Secretary of the Interior to ensure that it does not reflect any increase in value attributable to the construction of the project (Omnibus Adjustment Act, May 25, 1926, 44 Stat. 636, Sec. 46; 43 U.S. Code 423e). Thus, any buyer of "excess land,"

no matter how small an operator he himself may be, may lose the right to Federal project water if he pays a price which might include increments of value attributable to the availability of Federal project water. This is the so-called "anti-speculation" provision. It might also be called the "anti-sale" provision, for obviously it imposes a severe restraint upon the sale of such lands. No landowner wants to sell his land for less than he knows it is worth, and no buyer wants to pay full value if after he buys the land he cannot obtain the water necessary for its use. In consequence, sales are impeded. Furthermore, the provision is unfair because the owner of the excess land has usually paid assessments levied upon the land to pay for the Federal water supply, yet he is forbidden from recouping such costs as part of his sale price.

Interest-Free Financing
As A Financial Subsidy

The privilege of paying construction costs of a project on a long-term installment basis without paying interest on the deferred installments does represent a substantial financial subsidy. The government borrows the money to build the project, and pays interest on the resulting debt, but the landowner pays no interest on the deferred installments as he (through his local irrigation district) repays the government for his share of the cost of the project. If one assumes that the government's borrowing rate is 4% per year and that the

installments extend over a forty-year period, then the landowner's obligation to reimburse the government for the irrigation portion of the construction cost in annual, interest-free installments over the forty-year period has a present value to the government of about 50% of the total obligation. In other words, the landowner's obligation to pay a certain sum of money in forty equal annual installments without interest has a present economic worth of about one-half of that of an obligation to pay the same annual installments over the same period with interest on the deferred installments compounded at 4% per year.

Landowners in a reclamation project who take advantage of these interest-free installment contracts do not reimburse the government for its interest expense, and to that extent the landowners are not repaying the government the full cost of the project. Thus, the landowners receive a substantial and direct financial subsidy. They are getting the water supply at less than the government's actual cost. As has been noted, this financial subsidy is generally regarded as the consideration received by the landowners in return for their submission to the acreage limitation provisions of the reclamation law.

Some defenders of the acreage limitation provisions contend that there are other "subsidies" to landowners in Federal Reclamation Projects, such as the use of Federal credit and the use of revenue from electrical power sales. These are not true subsidies, however, and such contentions are rejected

as not supported by the facts. Interest-free financing is the only true subsidy which is recognizable as a purported justification for the acreage limitation provisions of Reclamation Law.

There is nothing unique about governmental subsidies in favor of private industry in this country. Such subsidies exist in great numbers and have enormous impact upon the economy of the United States. They are provided because a significant public benefit is believed to flow from such subsidization.

Probably the greatest and best-known of all government subsidies is the Post Office Department, the huge annual operating deficit of which is paid from the general funds of the United States. The federal taxpayers provide this subsidy for the benefit of all who use the mails - without limitation on the amount of their use. Another illustration is the public highway system, portions of which are subsidized to some extent by use of general tax revenues. Harbors, inland waterways, airways and navigational aids are all supplied to the operating industries without cost, because government policy dictates that these facilities should be supplied at government expense for the benefit of all who can use them. The Agriculture Department administers enormous subsidies for farmers to support the agricultural economy and provide the nation with needed supplies of food and fiber. Countless other subsidies exist, and, like the interest-free financing of reclamation project costs, they rebound directly to the benefit of private interests in the economic

system.

But none of these other subsidies so far as we know is restricted in its application by imposing an artificial maximum limit upon the size of the business or enterprise which may qualify to receive the full subsidy, or upon the amount of the subsidized service which any one person may use or receive. In this respect, the interest-free financing of reclamation projects is absolutely unique. The benefits of this one subsidy are limited to an artificially established maximum area of irrigable lands in single ownerships.

In contrast, the postal subsidy is available without limit to, and is fully enjoyed by, the largest mail order house, the magazine with the largest circulation, and the corporation with the greatest volume of mail just as it is to a single individual or a small business operation. There is no limit on the size of a business which may enjoy the Post Office subsidy, or on the extent to which any one business enterprise may use the mails at uniform, subsidized rates. No one is told he may mail only 160 letters or magazines per day or per week because the service is subsidized, nor is he charged more for higher volume usage. Neither is any limitation placed upon the number of vehicles or the daily mileage of any user of the highways. No limitation is imposed upon the number of barges which a single barge company may operate on our subsidized inland waterways. There is no limitation upon the amount of

acreage in single ownership which may receive the agricultural subsidies. (The "crop allotments" are based upon each landowner's history of crop production, without any maximum limit upon the area which may qualify.)

It is only in the case of the subsidy to farmers who want to buy an irrigation water supply from a federal reclamation project that the subsidy is limited. There is neither logic nor justice in any such discrimination. In view of the huge subsidies available to the largest as well as the smallest enterprise in all other fields of endeavor throughout the country, this discrimination against farmers who receive a subsidy under the reclamation laws is not only unprecedented but unjust.

The imposition of the acreage limitation upon the farmers in reclamation projects is contrary to the very spirit and purpose of the free enterprise system. Every businessman seeks to expand his operation to the fullest possible extent so as to increase his profits and enlarge his economic values. A farmer in a reclamation project, however, is restrained by the workings of this artificial federal law from expanding his land ownership beyond the rigid limit imposed by Congress 65 years ago. What possible logic, justice or public benefit is there in holding a farmer down to a size of operation which will supply only a bare existence for himself and his family? Why should a farmer who makes a success of his business and

who wants to expand his holdings be effectively forbidden from doing so by an antiquated federal law which prevents him from buying water for additional land?

Furthermore, the acreage limitation provisions are contrary to the public interest. They are economically stifling. They are contra-incentives. They impede growth. They perpetuate "subsistence farming" and inhibit efficient and progressive farm production. They increase the cost and decrease the quantity of agricultural output in reclamation projects. They aggravate agriculture's financial problems and tend to frustrate other governmental programs designed to strengthen the farm economy. They hamper this nation's efforts to meet the future food and fiber needs of a burgeoning world population.

The Engle Formula

A logical alternative to the present absolute limitation would be to allow excess landowners to be relieved of the limitation by giving up the benefits of the subsidy represented by interest-free financing. Since the acreage limitation is a limitation upon the enjoyment of the governmental subsidy, there is no basis for applying the limitation to those who do not receive the subsidy.

Congress has already adopted the alternative of "no interest-free financing, no acreage limitation" in a reclamation law of general application and in at least three specific

reclamation project authorization acts.

The general law embodying this principle is the Small Reclamation Projects Act of 1956 introduced and sponsored by the Honorable Clair Engle, then a member of the House of Representatives and later a United States Senator from California (Act of August 6, 1956, 70 Stat. 1044; 43 U.S. Code 422a-422k). This statute provides for the financing of small reclamation projects under the general reclamation laws but, instead of requiring all lands in excess of 160 acres in a single ownership to be sold (or subjected to "recordable contracts" requiring ultimate sale) in order to receive project water, this statute specifies that interest shall be paid to the United States, at the then current government bond interest rates, upon that portion of the repayment obligation which is attributable to furnishing irrigation benefits to lands within the project in private ownerships of more than 160 acres per person (43 U.S. Code 422e(c)).

This provision for the payment of interest in lieu of the acreage limitation has become known as the "Engle Formula." It is a very simple provision whereby the benefit of the subsidy represented by interest-free financing is limited to 160 acres per owner, and is denied to acreage in excess of 160 acres per owner. In addition to paying his share of the construction costs, each owner of more than 160 acres is required to reimburse the government in full for the interest

cost attributable to water service for his excess acreage. In return he is allowed to keep his excess lands and purchase project water for the irrigation thereof.

This same "Engle Formula" has been incorporated in at least three specific acts authorizing reclamation projects:

1. The Washoe Project in Nevada and California authorized August 1, 1956 (70 Stat. 775).

2. Mercedes Division, Lower Rio Grande Rehabilitation Project, Texas, authorized April 7, 1958 (72 Stat. 82).

3. La Feria Division, Lower Rio Grande Rehabilitation Project, Texas, authorized September 22, 1959 (73 Stat. 641).

Thus, in a general law and in at least three special acts the Congress has recognized and applied the principle that the acreage limitation is the quid pro quo for the financial subsidy represented by interest-free installment financing, and has adopted the Engle Formula whereby excess landowners who forego the financial subsidy by paying interest upon their share of the deferred repayment obligations are not subject to the acreage limitation provisions.

The Engle Formula can be viewed as a corollary to the "pay-out principle," under which the 160-acre limitation, although initially applicable, ends when the construction charges payable under a contract with the United States are fully

satisfied. This "pay-out principle" was recognized and applied by the Bureau of Reclamation for more than 50 years. (See "Excess Land Provisions of the Federal Reclamation Laws and the Payment of Charges," Department of the Interior, May, 1956.) It has been rejected by the Bureau only in recent years, and is the subject of present litigation between California water user organizations and the United States in United States v. Tulare Lake Canal Company and Tulare Lake Basin Water Storage District, No. 2483, Federal District Court for the Eastern District of California.

These Congressional and administrative precedents, as well as the very clear dictates of logic, compel the conclusion that the reclamation law should be amended so as to permit those excess landowners who wish to do so to relieve themselves of the burden of the acreage limitation by paying interest upon the portion of the deferred installments which is attributable to their excess lands.

There are some Reclamation contracts, called "9(e) Contracts," which do not have fixed capital sums to be paid but instead are "utility-type" contracts calling for payment of water service charges on a per-acre-foot basis. Since they contain no principal sum upon which interest can be computed, they are not directly responsive to the Engle Formula. By a simple analogy, however, the principle of the Engle Formula can be applied to such contracts: As shown above, the value of

the interest-free financing on a forty-year term is roughly equal to about 50% of the total obligation; in other words, those who pay interest pay approximately twice the total amount paid by those who do not pay interest. Under "utility-type" contracts, therefore, the results of the Engle Formula can be accomplished by doubling the water charges for lands in excess of the established limit per owner for those who wish to forego the subsidy and thereby avoid application of the acreage limitation provisions. Thus, for Class I water service under some current Central Valley Project Section 9(e) contracts, the charge for excess lands freed from acreage limitations would be \$7.00 per acre-foot instead of \$3.50, and for Class II service it would be \$3.00 instead of \$1.50.

Economic Factors

Although the early projects under the Reclamation Act embraced predominantly public lands, the later projects have included more and more private lands. In recent years relatively little public land has been included in reclamation projects. Most of the problems growing out of the acreage limitation provisions in California and elsewhere have arisen by reason of the fact that large areas of private lands, already fully developed for irrigated agriculture and requiring only a supplemental water supply, have been affected by federal reclamation projects in recent years.

Because of its latter-day impact upon private land

holdings, some supporters of acreage limitation have sought to justify it as a "land reform" measure. Certainly that was not any part of the purpose of the original limitation provision of the 1902 Act, for that statute was aimed primarily at developing and settling the public lands. If "land reform" has been a purpose of any of the subsequent additions to the body of acreage limitation law, that purpose has not been expressed by the Congress. "Land reform" as such was never a Congressional purpose or objective in enacting the acreage limitation provisions of Reclamation Law. It is only an afterthought on the part of those who seek some justification for perpetuating these anachronistic provisions.

If and to the extent that "land reform" may be a proper subject of national policy (a question as to which we express no opinion), it should be faced squarely and dealt with forthrightly by the Congress in laws of general application on a nation-wide basis. It should not be treated by implication or inference in laws dealing primarily with other matters. And certainly a subject of such national importance must not be read into laws about water supplies in a fragmentary part of only about one-third of our 50 States.

We reject, therefore, any suggestion that the acreage limitation provisions are a part of a national "land reform" policy and that they should be retained as such.

The imposition of the artificial acreage limitation

upon fully developed, privately owned, already irrigated farm lands has created a welter of problems, both economic and political. These problems have been greatly intensified by the dramatic change in the nature of the farming industry during the 65 years since the reclamation law was first enacted. During this period, the horse has virtually disappeared as a source of power for the operation of agricultural implements, and in place of the horse, vast numbers of costly and complicated machines have been developed and are now a necessity for the planting, cultivation and harvesting of agricultural products. These machines require large capital investments which cannot be justified unless the operating units contain a sufficient acreage to employ the machines efficiently.

As a result of these and other factors, the average size of farms in the United States today is about two and one-half times what it was when the 1902 Act was passed, and the optimum size is greater than the average. We believe the full subsidy should be at least available to such minimum size of farm as is large enough for operation at maximum efficiency. What is that size?

At our request, the California Department of Agriculture has caused a paper to be prepared on the economic impact of the 160-acre limitation upon modern agriculture. It is entitled "Economic Brief on 160-Acre Limitation for Irrigation Water -- Modification Needed." A copy is attached hereto as

"Exhibit A". It was prepared by Mr. Elmer W. Braun, Economic Advisor of the California Department of Agriculture, and Professor J. Herbert Snyder, Professor of Agricultural Economics in the University of California at Davis, with the collaboration of several of their colleagues. The paper is an excellent summary of the economic factors involved in this problem with well-documented references to several specific areas in California and in other states, as well as in Mexico. The paper concludes, among other things, that the fixed 160-acre limitation "is grossly outdated" and that the public interest of the United States "would be better served" if the limitation were eliminated. If elimination proves not to be feasible, the paper concludes that the provisions of the law should be updated and adjusted to present-day economics with a practicable degree of flexibility to fit future economic changes.

The Economic Brief points out that by reason of the need for capital investment in costly machinery and by reason of the increased costs of farm labor, the minimum size of efficient operating units has greatly increased throughout the agricultural economy. Using many specific illustrations, the brief shows that the cost per acre of operating a farm unit of 160 acres is much higher than for larger units, with the result that the 160-acre unit cannot compete with the larger units having lower operating costs per acre.

In Yolo County, for example, a farm of 600 to 700 acres

is required for maximum efficiency according to a 1960 study by the University of California. In Kern County, according to a 1963 study by the University, the operation of at least 640 acres as a farm unit is required to obtain the maximum net revenue per acre. On the east side of the San Joaquin Valley, a 1963 University study shows that 640 acres was the minimum unit which could be operated efficiently, and that additional economies could be realized by operating not less than 1280 acres as a unit. For orchard crops, such as peaches, a 1963 University of California study indicated that a 300-acre unit at medium yields and medium prices would barely "break even," and, obviously, a substantially larger unit would be required in order to realize an operating profit.

The pattern is similar in other states. A 1965 study published by Texas A. & M. University showed that in the Texas high plains the maximum efficiency for a one-man operation required at least 440 acres. In the wheat-pea area in Eastern Washington and North Central Idaho, a 1967 study published by Washington State University indicated that the optimum was 1600 acres per unit. A 1966 study published by Iowa State University showed that in the highly fertile area of the State of Iowa, the cost per acre for a 160-acre farm was about 62% higher than the cost per acre of a similar operation for a farm of 560 acres, thus showing that the operator of the smaller tracts could not possibly compete in the same markets with the operators of the

larger tracts. A 1966 study of Purdue University showed a similar pattern in West Central Indiana where the maximum efficiency and lowest operating cost could not be obtained on less than the 640-acre units.

The need for expansion of the size of farm units in order to achieve efficiency and maintain a competitive position in the agricultural economy is emphatically stated in the recent (July, 1967) "Report of the National Advisory Commission on Food and Fiber" at page 240:

"These changes [in capital requirements and farming technology] not only make it possible for the individual farmer to increase his volume of operations - they make it necessary for him to do so. He must expand his investment and then spread costs over more units of product to remain competitive." (Emphasis supplied.)

Thus, it is all too obvious that the 160-acre limitation is not only unrealistic, uneconomic and obsolete but also grossly unfair to the farmer who must comply with it. The limit forces the farmer to operate a very inefficient farm with disproportionately high costs per acre. He is compelled to sell his crops in a market where he competes, or tries to compete, with producers having much lower costs per acre resulting from the economies of their large-scale operations. In truth, the 160-acre farmer is in many cases prevented by the limitation from making any profit at all, because his costs exceed his gross revenue. Many farm families are forced to seek

supplemental, non-farm employment. Since the reclamation subsidy is supposed to benefit the farmer, and enable him to make enough profit to support a family, it defeats its own purpose by freezing the farmer into a rigidly limited unit from which he cannot hope to realize a profit. The "family-size farm" of 160 acres is a snare and a delusion.

It is appropriate to point out here the curious anachronism of this repressive and regressive 160-acre limitation remaining in the Reclamation Laws at a time when we are faced with a worldwide population explosion and dire predictions of worldwide famine. Instead of fostering more efficient farm sizes and greater production, the Reclamation Laws seek to preserve inefficient farm units, and even to break up large and efficient farms. Slavish adherence to the symbolic 160-acre farm limit adopted in vastly different circumstances 65 years ago is so out of keeping with the government's general awareness of changing times and changing public needs that we believe the Congress should, and will, respond to a demand for a "new look" at the acreage limitation provisions. It is to be hoped that the Congress may be convinced, as we are, that these 65-year-old rules are not only obsolete and outmoded but actually unwise and unsound in the present-day agricultural economy.

The Economic Brief also quotes the following statistics taken from the publications of the Bureau of Census as to the average size of all farms throughout the United States:

1910 - 138.5

1964 - 351.5

This nationwide average of the size of operating farms is one possible measure of the effect of changing economic conditions upon the agricultural industry. All combinations of economic factors are automatically brought to bear upon the determination of average farm sizes. The fact that the average size throughout the country has increased from 138.5 acres in 1910 to over two and one-half times that area, or 351.5 acres, in 1964 shows very clearly that during the period since the enactment of the 160-acre limitation in 1902, the economics of the agricultural industry have caused farmers to acquire larger and larger holdings and consolidate smaller holdings. This plainly shows the impact of these changing economic conditions upon farming methods and practices.

This dramatic increase in the average size of farms on a nationwide scale clearly demonstrates the long overdue need for an adjustment of the 160-acre limit. If 160 acres was a reasonable limit for the "support of a family" in 1902, when the countrywide average was somewhat less than that figure, then the present limit ought to be increased to a size which is at least proportionate to the recorded increase in the average farm size throughout the country since 1902. The average size has increased to over 250% of its 1902 level. If a proportionate increase should be applied to the 160-acre maximum size for a

subsidized reclamation project farm, then the 160-acre limit would be increased to at least two and one-half times that area, i.e., to 400 acres.

The data contained in the attached Economic Brief demonstrate, however, that even 400 acres is not an adequate size to obtain efficient and competitive farm operations. In most areas at least 640 acres is needed, and more is required in some localities. We believe the public interest requires that the limit (if there is to be one) upon the number of acres in one ownership which can receive the interest-free financing should be related to efficiency and economy of farm operations and not to some symbolic and arbitrary number of acres. This principle leads to the conclusion that the maximum subsidized area should be at least 640 acres per owner, and that there should be provision for administrative increase in the maximum whenever future changes in economics or technology indicate that an increase is appropriate.

It is our opinion, therefore, that if the acreage limitation provisions of reclamation law are to be retained at all, then they should be amended so as to change the 160-acre figure to a number of acres which is consistent with modern requirements for efficient farm operations. Provision should also be made for reappraisal of that figure at least every ten years and for its upward adjustment to keep in step with future changes in agricultural technology and economics.

A change from 160 to 640 acres per owner would go far in correcting the inequities which the rigid 160-acre limitation has created as farm sizes have increased and capital requirements and labor costs have risen to the point where smaller farm units are being forced out of business and larger units are required in order to conduct profitable farming operations.

Conclusions and Recommendations

It is the considered and unanimous conviction of all of the members of your Task Force that the acreage limitation provisions of Federal Reclamation Law are antiquated and obsolete and very much in need of modernization. A majority of the members also believe these provisions are wrong in principle, and should be repealed.

Upon the assumption, however, that outright repeal of these provisions is not likely to be accomplished at an early date, we unanimously recommend the following modifications which we think will go far toward solving the most serious problems without actually repealing the provisions in their entirety:

1. An immediate increase in the number of acres in one ownership eligible for interest-free financing to at least 640 acres, with provision for a further increase in the limitation every ten years if economic or technological changes indicate that an increase is appropriate and consistent with the public interest.

2. Immediate adoption of the Engle Formula providing that the acreage limitation shall not apply in any existing or future project to those lands in single ownership which are in excess of the limitation but on behalf of which interest on the allocated share of all deferred installments of construction costs is paid in full.

Attached as "Exhibit B" is the text of a bill which we believe would accomplish the two modifications suggested above.

Respectfully submitted,

/s/ Richard D. Andrews
Richard D. Andrews

/s/ William H. Jennings
William H. Jennings

/s/ James F. Sorensen
James F. Sorensen

/s/ Breckinridge Thomas
Breckinridge Thomas

/s/ Burnham Enersen
Burnham Enersen, Chairman

E X H I B I T A

State of California
Ronald Reagan
Governor

California Department of Agriculture
Earl Coke
Director

ECONOMIC BRIEF
ON
160-ACRE LIMITATION
FOR
IRRIGATION WATER

- - - -

MODIFICATION NEEDED

Prepared by

Elmer W. Braun
Economic Adviser
California Department of Agriculture
and
J. Herbert Snyder
Professor of Agricultural Economics
University of California, Davis

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With the Collaboration of
Professional Colleagues
Named on Concluding Page

Sacramento
September, 1967

160-ACRE LIMITATION FOR
IRRIGATION WATER

- - - - -

Modification Needed

Economic Principles and Considerations

Through its Reclamation Service, the United States Department of the Interior limits the sale or delivery of water, provided by means of its facilities for irrigation purposes, to farming operations not in excess of 160 acres under single ownership. Except in special cases, such limitations have applied since 1902, under federal legislation and regulations issued pursuant thereto.

In enacting the Reclamation Law of 1902, the Congress drew the 160-acre standard for it from an earlier law relating to homesteading. Homesteading had been authorized by the Homestead Act of 1862 to encourage family settlement of public lands then still available.

Congress adopted the Homestead Act primarily for land receiving cultural moisture from natural precipitation. The Reclamation Act was adopted to encourage family settlement of public lands in the arid West, through government financed irrigation projects. The provisions of the Reclamation Act were designed to provide financial inducements in the form of low-cost water rates to small units of land not in excess of 160 acres, and to prevent undue individual or speculative gains.

Congress no doubt intended to be consistent in the basic objectives of the Homestead Act and the Reclamation Act. The implementation and economic impact through time, however, is quite different for the two acts. The impact of the 160-acre limitation under the Homestead Act was ended when ownership procedures under it were completed, and ownership in fee simple granted. From that time forward the owner was free to buy or sell land in the open market as he wished. Farm sizes, therefore, even in heavily homesteaded areas, are the result of normal economic forces.

The impact of the 160-acre limitation under the Reclamation Act is regulatory rigidity. It is not dynamic. It is not consistent with changed economic conditions through time. For land otherwise arid a limitation established by Congress, and expressed in area terms for the availability and application of water, is a fixed standard to be changed only by Congress, or by administrative or judicial interpretation. None of these have occurred in a manner sufficiently practical to be acceptable. The result is that farmers are coping with a regulation that is long outdated. The regulation is inconsistent and impractical in the economic environment in which it regulates.

In an economy based upon profit and loss and freedom of enterprise, changes in unit size to meet changes in economic conditions must be permissible. Only if farm operators, seeking to maximize net income returns, have freedom to make such shifts, can they adjust to changes in economic conditions. If such changes are restricted arbitrarily by law or by regulation, inefficiencies

and economic losses result. Some inefficiencies and losses may be clearly apparent; others may be hidden. Farmers who are restricted as to acreage are prevented from adopting optimum technology in machinery and equipment. Modern equipment and management capabilities could be more efficiently combined with larger land units. To be prevented from doing so means that land, labor, management and capital are not being used in the most efficient combination. In an economic sense resources are being wasted, and the general welfare is impaired.

Modern living standards call for a higher net income than in the past. An adequate net income is conditioned upon a favorable relationship between the gross income from products sold and the production costs of such products. That this relationship should be a favorable one is a commonly accepted concept. It cannot be achieved if gross returns are artificially limited because of the size of the producing unit. Nor can the relationship be favorable if unit costs are high. Unit costs tend to be high on the small producing units because of the uneconomic combination of producing inputs, as compared to the more efficient combination of producing inputs on a larger producing unit.

The 160-acre limitation therefore discriminates against those farmers subject to it. The gross income of producers limited by the regulation is low, as compared with the gross income of producers not so limited. The unit costs are higher for the producers so regulated than the unit costs for producers not subject to the regulation. Net income is impaired by a relatively low gross and a relatively high cost.

The impact of the regulation in a broad sense is a lesser gross income, a higher cost of production, a lesser total production of food and fiber products, and higher consumer prices than would otherwise be the case.

Economic principles centering around economies of scale apply not only in the field of agricultural production; they relate to many other kinds of economic activity. It is general knowledge that operating structures used in manufacturing have undergone a wide range of changes as to size since the beginning of the Industrial Revolution. The same is true of transportation, warehousing and distribution. Could one even imagine what our transportation system would be like, if trucks were limited to a single size utilized in 1910 or 1920? Could the regulation of the size of trucks in one segment of the trucking industry be rationalized or justified? To do so would be unthinkable.

The 160-acre limitation upon producers served by federal irrigation projects must be modified or eliminated, if land use is to be maintained in accordance with changes in economic conditions. Restrictions on producers now subject to limitation need to be relaxed, so that they may compete effectively with producers not so limited.

It is often contended that making public financed water available to farm units larger than 160 acres would be an undue "public subsidy" in the form of "unearned increment". This point, used in support of existing limitations, tends to be overstated. In making the contention the full difference between raw land value and developed land value is attributed to the availability of water. In actual practice the water input is only one of the

inputs. There are other inputs such as leveling, ditching, piping, buildings, and often long-term plantings, such as alfalfa or tree crops. Also, taxes and interest payments may have been made for extended periods before water became available.

The inputs of capital, management and labor are just as important in the total development as is the availability of water. The availability of water would have little value in the absence of other inputs. Water is an essential input item, but by no means the only one that contributes to value. To be realistic, value and returns should be attributed to such inputs, as well as to water. With such proper allocation the value increment from water as a public subsidy would be much less than is often asserted in an overstated sense. Furthermore, the government water facilities are more in the nature of a community development investment than a subsidy to individuals.

By economic considerations the 160-acre limitation should be set aside. If elimination of the limitation is not feasible for political reasons, then the fixed standard should be updated and provision made for sufficient flexibility to meet changing economic conditions through time.

Findings are here presented focusing attention on the economics of income and production costs in relation to farm size. The findings are presented in support of the need for a substantial change in or elimination of the 160-acre limitation. Considerations presented proceed from those relating to California to the broader regional, national, and international considerations.

California

Farm management considerations are especially important to agricultural producers in California. California producers operate in a high-cost environment with respect to land values, farm worker wage rates, custom built equipment, production supplies and taxes. Furthermore, California producers must compete not only in local markets, but in distant domestic and foreign markets. High transportation expenses, therefore, also become a part of the high-cost environment. Under conditions of high costs and relatively low market prices, efficiency in producing operations is of paramount importance.

The Department of Agricultural Economics of the University of California has made a number of studies relating to the economics of farm size. References to these studies are made with respect to points pertinent to the 160-acre limitation.

1. Imperial Valley

A report entitled "Cost-Size Relationships for Cash-Crop Farms in Imperial Valley, California" is a comprehensive study of cost-size relationships in the production of vegetable and field crops on farms located in the Imperial Valley.

A pertinent finding of the study is: "Substantial cost advantages are realized by field crop operations up to about 1,500-2,000 acres, but

thereafter cost economies are very slight." For various cultural reasons vegetable crop farms also grow field crops. The typical practice in the Imperial Valley, therefore, is a multiple cropping pattern. Under these conditions an operating unit limited to 160 acres, or even to 320 acres, would be an uneconomic unit. Application of such limitations in the Imperial Valley would grossly modify the cropping patterns, or eliminate entirely the cropping patterns natural for the area.

Multiple cropping patterns are necessary to control plant pests and diseases, to achieve soil conditioning, and for other farm management reasons. To attain appropriate operating efficiencies a multiple cropping pattern requires a farm operating unit large enough to properly accommodate the several crops in the producing pattern.

The study here referred to is based upon conditions of 1959. There have been further advances in technology since that time. Economies of size would therefore call for a larger operating unit now than in 1959.

Reference: "Cost-Size Relationships for Cash-Crop Farms in Imperial Valley, California", by Harold O. Carter and Gerald W. Dean, University of California, Division of Agricultural Sciences, Giannini Foundation Research Report No. 253, May, 1962.

2. Yolo County

A second study of crop farming was made in Yolo County during 1960. It is entitled "Cost-Size Relationships for Cash-Crop Farms in Yolo County, California".

Yolo County is in the southern area of the Sacramento Valley.

Among the pertinent conclusions of this study is the following: "Machinery costs per acre decline sharply up to about 600-700 acres, but only gradually (about \$1.00 per acre for each additional 100 acres operated) thereafter".

As already indicated, this study was made in 1960. A current study would indicate a larger acreage for efficient operations, rather than smaller.

The limitation of 160 acres would not be practical for agricultural operations in the area, by a wide margin.

Reference: "Cost-Size Relationships for Cash-Crop Farms in Yolo County, California", by Gerald W. Dean and Harold O. Carter, University of California, Giannini Foundation of Agricultural Economics, Mimeographed Report No. 238, December, 1960.

3. Kern County

A third study bearing specifically on the matter of acreage limitations is entitled "Economies Associated with Size, Kern County Cash-Crop Farms".

Results from the Kern County study are consistent with the earlier study made in Yolo County.

A significant conclusion from this study is: "The effect of the variable product mix, combined with technical economies, is that the largest net revenue per acre is obtained by a 640-acre farm unit. Net revenue increases as farm size increases up to 640 acres, as the effect of the reduction in cost from technical economies is greater than the reduction in total revenue resulting from the variable product mix. For farms larger than 640 acres the effect of the product mix is greater than the effect of technical economies on net revenue".

The study carries a further significant statement: "The analysis indicates that, under the present state of technology available and used by farm operators in Kern County, the technical economies are nearly exhausted by a farm unit of 1,000 acres. However, in the future it is quite conceivable that substantial technical economies will exist for farms larger than 1,000 acres".

A limitation of 160 acres is not practical or realistic for farm operating units in the Kern County area.

Reference: "Economies Associated with Size, Kern County Cash-Crop Farms", by J. Edwin Faris and David L. Armstrong, University of California, Giannini Foundation Research Report No. 269, December, 1963.

4. San Joaquin Valley Eastside

Another study dealing with "...On-Farm Irrigation Water Availability and Cost..." applies to farmers located in what is generally known as the San Joaquin Valley Eastside.

Data were compiled on the characteristics of farms in the area ranging from 80 to 1,280 acres. The characteristics were then reflected in five farm models for economic analysis.

The general conclusions of this study are "...farmers can improve efficiency, reduce average total cost per unit and increase profits..." by operating production units of sufficiently large size. Specifically, unit costs consistently declined under the long-run cost curve, as size increased from 80 to 1,280 acres. Farm profits per unit of production also increased with farm size due to increasing volume per farm, as well as a widening spread between prices and costs of production. The rate of decrease in unit cost and the rate of increase of profit were most significant as farm size increased to 640 acres, but continued benefits were possible through the 1,280 acres size of operation.

Another conclusion of this study supports the importance of the economies of size as they relate to the ability of the farm to pay for irrigation water. The larger size farms could break even, even though the price per acre foot of water was nearly twice what the smaller operations

needed in order to break even. The ability of the larger farms to pay higher prices for irrigation water relates to their lower fixed costs per unit.

This study of the Eastside Area of the San Joaquin Valley identifies and confirms for the San Joaquin Valley the same basic relationships between farm size increases in acres and reducing costs per unit as are found in the Sacramento and Imperial Valleys. An additional study of other sub-areas in the San Joaquin Valley demonstrates that farm organization and resource uses are similar. It may be assumed that the same size-cost relationships also hold.

Reference: "Economics of On-Farm Irrigation Water Availability and Costs, and Related Farm Adjustments", by Trimble R. Hedges and Charles V. Moore, University of California, Division of Agricultural Sciences, Giannini Foundation Research Report No. 263, June, 1963.

Related and supporting studies on the relationship of costs, returns and farm size by the same writers are Giannini Foundation Research Report No. 257, September, 1962, and Report No. 286, December, 1965.

5. Orchard Crops

If there is any type of intensive crop production that might be profitably carried out on 160-acre units, it would conceivably or theoretically be fruit crops. From the standpoint of economics and marketing, fruit production patterns of land utilization should not be imposed by an arbitrary regulation such as the 160-acre limitation. Production patterns and land utilization should come about by normal competitive economic forces. The arbitrary approach results in an improper combination of economic resources, leading to economic waste.

In the light of modern technology, and incomes, even intensive orchard production needs producing units larger than 160 acres. At medium yields and medium prices, peach producers would break even or exchange dollars with a 300-acre operating unit. It would require better than medium prices to be assured of a management or profit income on 300 acres, with medium yields per acre.

Farm Management Specialists of the Agricultural Extension Service of the University of California are of the view that 160 acres is too small a unit for other orchard crops, as well as for peaches. Present day income needs require a larger acreage.

The conclusion, therefore, is that even for orchard farming a limitation of 160 acres is too restrictive.

Reference: "Economies of Scale in California Cling Peach Production", by G. W. Dean and H. O. Carter, California Agricultural Experiment Station, Bulletin 793, University of California, February, 1963.

FARM SIZE AND INCOME IN OTHER STATES

Studies made in other states relating to the size of farms and farm income reveal results similar to the findings made in California.

Texas

Texas A & M University, in cooperation with the United States Department of Agriculture, made a detailed study of the relationship of the size of irrigated cotton farms to farm costs and income in the Texas High Plains area, located in Western Texas.

The primary objective of the study was to examine the efficiency and profitability of various sizes of cotton farms in the Texas High Plains. A secondary objective included determination of the economies achievable within the limits of a family farm business.

It was found that a one-man farm could operate efficiently; however, to attain highest efficiency it was necessary for the one man to operate 440 acres with effective equipment. With respect to other farm sizes the findings were: "Recent trends indicate that the cotton farms in the Texas High Plains are extending their acreage beyond the least-cost point at 440 acres of farmland. In moving to larger sizes, farms do not achieve lower average costs or greater efficiency. But they do achieve greater profit."

A limitation of 160 acres would be too restrictive for irrigated cotton farms in Western Texas.

Reference: "Economies of Size on Irrigated Cotton Farms of the Texas High Plains", by J. P. Madden and R. Davis, Texas A & M University Bulletin 1037, June, 1965.

Washington-Idaho (Wheat-Pea Area)

An area in eastern Washington known as the Palouse Area, and extending into north-central Idaho, is especially adapted to the production of wheat and peas, primarily wheat and dry peas. Other crops also commonly grown in the area are barley and alfalfa.

Washington State University, in collaboration with the United States Department of Agriculture, made a detailed study concerning the relationships of costs, incomes and farm sizes for this area. The study drew data from farms participating in federal price support programs, and from farms not participating in such programs. A number of farm size classifications were included in each group.

Findings of the study especially pertinent to this brief are:

1. The optimum size of wheat-pea farms was found to be 1,600 acres. The 1,600 acre size was found to be optimum for farms not participating in the federal price support programs, as well as for farms participating therein.

2. In the area under study, a representative farm had increased in size from 444 acres in 1945 to 605 acres in 1964.

3. Significant ratios for different farm sizes are:

<u>Size</u> Acres	<u>Participating</u>		<u>Non-Participating</u>	
	Profit Per Acre	Cost Per Gross Dollar	Profit Per Acre	Cost Per Gross Dollar
600	\$ 2.35	\$.964	--	--
800	6.68	.899	\$2.83	\$.956
1,200	10.08	.847	6.28	.904
1,600	12.39	.812	9.36	.859
1,900	11.25	.831	7.18	.892

It is to be noted that the profit per acre for farms participating in federal commodity programs is higher than for farms not participating. The lowest cost per dollar of gross and the highest profit per acre occurs at the 1,600-acre size for both participating and non-participating farms. It is clear that 600-acre farms and smaller farms have difficulty competing with 1,600-acre farms in either case.

While the study does not specifically show it, it is obvious that a farm size of 160 acres would not be an economically feasible unit in the wheat-pea area of Washington-Idaho.

Reference: "Economics of Farm Size in the Washington-Idaho Wheat-Pea Area", by E. L. Michalson, Washington State University, Technical Bulletin 52, May, 1967.

Iowa

Some of the most fertile agricultural areas of the United States are located in the State of Iowa. Even in Iowa farms as small as 160 acres cannot compete successfully with larger farms. A study issued in Iowa by the Agricultural Extension Service of the Iowa State University reflects the following with respect to production costs in relation to size of farms:

Total cost per acre, including operator and family labor by size of farm -

<u>Acres</u>	<u>Cost Per Acre</u>
160	\$90.99
240	79.11
320	67.23
440	63.07
560	55.59

Costs per acre decrease sharply from a 160-acre size to a 320-acre size, and less sharply for larger sizes.

A 160-acre farm would have difficulty remaining competitive under current operating conditions.

Reference: "1965 Costs and Returns on Iowa Farms", FM1517, Iowa State University, Cooperative Extension Service, November, 1966.

Indiana

In a study of the factors affecting cost of production on farms in West Central Indiana, Purdue University economists noted the importance of farm size in reducing the cost of operation, and in providing profit to management. Significant findings are:

1. "With average-level management, the average cost per \$100 crop production decreased from \$109.22 on 80 acres to \$82.77 on 240 acres. As size increased to 640 acres the average cost decreased slowly to \$72.22."
2. "The differences in costs of production associated with increasing farm size are important, but even more important is the combination of lower costs and greater volume. For the average manager, as size increased from 160 to 320 to 640 acres, returns to management after all costs increased, respectively, from \$1,379 to \$5,655 to \$15,579."

The importance of size in this study is significant, when one compares the above returns to the estimates of what would be an adequate income for a farm family in that region. Purdue economists believe that a \$7,000 to \$9,000 management income would be required. To attain a level of income in these amounts would require an operation in excess of 400 acres.

Reference: "Factors Affecting Cost of Crop Production in West Central Indiana", R. Hubele, J. E. Kadler, P. Robbins, and R. Kemper, Purdue University Research Bulletin No. 822, December, 1966.

AVERAGE SIZE OF FARMS A Simple and Practical Gauge

A further measure to gauge the need for a modification of the 160-acre limitation is the average size of farms in the United States, as reported by the Bureau of Census of the United States Department of Commerce.

Census data on farm size changes over the years reveal that farms of 160 acres varied much more widely from the average farm size in the United States in 1964 than in earlier years. In fact, they indicate that if average size is a reasonable indication of the size that farms should be in order to function as economic units, then the 160-acre size has fallen farther and farther behind over the years.

It is recognized that the average size of farms is not a precise measure for gauging a water limitation statute or regulation. It is a general guideline, and does reflect direction and scope of change.

The average number of acres per farm in the United States for relevant census periods are:

1910 - 138.5
1920 - 148.5

1959 - 302.8
1964 - 351.5

It is to be noted that in 1910 the average number of acres per farm amounted to less than 160. Under conditions then prevailing, 160 acres was a convenient and reasonably acceptable standard for purposes of furnishing irrigation water.

In 1964 the average number of acres per farm was 351.5. Application of the 1910 ratio in a physical sense to the 1964 average would result in 405 acres, as a comparable limitation in current times. This would include all patterns of farming. To be practical, it would need to be adjusted for different types of farming and for monetary considerations as well.

The average size of farm for California as of 1964 was 458 acres. Application of the United States ratio of 1910 to the California average of 1964 would reflect a limitation of 530 acres. Again, to be practical the 530 acres would need to be adapted to different patterns of production. In very broad terms different patterns of production would be orchards and vineyards, vegetable crops and field crops.

A ratio derived from a time period earlier than 1910 would indicate an even greater total as a current standard.

INTERNATIONAL CONSIDERATIONS

A treatment of the production and competition aspects of the 160-acre water limitation would not be complete without calling attention to an important international consideration.

In Mexico the Government has been and is supporting the development of irrigation projects. Legal ownership limitations in terms of hectare units for receiving water are the equivalent of 247 acres, a substantially larger unit than the 160 acres established in the United States. The economic advantage of the larger unit becomes even greater when account is taken of the much lower farm worker wage rates in Mexico as compared to those in the United States.

Mexico exports a number of agricultural products to the United States that are directly competitive to products produced on irrigated land in the United States.

It has been pointed out above that the 160-acre limitation imposed for federal projects in the United States results in the inefficient use of economic resources. It also encourages the flow of capital, technical knowledge and management from the United States and elsewhere to Mexico, to further develop agricultural production there.

Augmentation of production in Mexico augments the shipment of products to the United States for distribution and consumption. Such products are competitive with products produced in the Western States. Under more favorable competitive conditions much of the production increase could be developed in the United States, rather than elsewhere.

A modernization of the 160-acre limitation would lay the foundation for more favorable competitive conditions.

CONCLUSIONS

1. The 160-acre limitation of the Reclamation Act of 1902 carried forward a 160-acre standard adopted in 1862 for the Homestead Act. Due to economic changes, even as early as 1902 a size standard designed for the arid West should have been more than 160 acres, to adjust to the time span of 40 years.
2. In the light of farm management principles and economic studies of modern cultural practices, the fixed 160-acre limitation is grossly outdated. The standard needs to be updated and made sufficiently flexible to meet economic changes that occur from time to time.
3. To continue and maintain an arbitrary and restrictive standard continues to generate and carry forward inefficiencies in production and income. These come from the improper combination and use of the economic resources of land, labor, management, and capital investment. The fixed standard of a 160-acre limitation, therefore, results in a waste of economic resources by a distortion of competitive forces.
4. The public interest of the United States would be better served if the Congress would eliminate the 160-acre standard. Should Congressional lifting of the limitation in its entirety not be feasible, then the Congress should initiate and adopt an updated standard adjusted to the economics of present day agriculture and its markets. Provision should also be made for a practical degree of flexibility to fit economic changes through time.

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The writers are grateful for the assistance so generously given.

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E X H I B I T B

A BILL

To amend and supplement the Federal reclamation laws relating to the furnishing of water service to excess lands.

BE IT enacted by the Senate and House of Representatives of the United States of America in Congress assembled,
That the third sentence of Section 46 of the Act of May 25, 1926, 44 Stat. 649, is hereby amended as follows: (1) by inserting "(a)" at the beginning thereof; (2) by deleting from the third sentence the words "160 irrigable acres" and inserting in substitution therefor "640 irrigable acres or such greater number of acres as may be determined by the Secretary of the Interior pursuant to Subsection (b) hereof"; and (3) by adding to Section 46 a Subsection (b) reading as follows:

"(b) The Secretary of the Interior shall review the 640-acre limitation provided for in Subsection (a) hereof at ten-year intervals in the light of economic and technological changes affecting agriculture during such intervals and shall increase the number of acres of nonexcess land to the extent, if any, that he determines to be justified to promote efficient and profitable agricultural production."

Sec. 2. The Secretary of the Interior is hereby authorized to amend existing contracts for water service made

under Subsection (e) of Section 9 of the Reclamation Project Act of 1939 so as to permit the furnishing of water service to lands in excess of 640 acres (or such larger number of acres as may be determined pursuant to Subsection (b) of Section 46 of the Act of May 25, 1926, as amended) at a rate equal to twice the rate per acre-foot charged for water service to non-excess lands in lieu of the requirement of a recordable contract. The Secretary is further authorized, upon request of a landholder who executed a recordable contract so as to secure water service for his then excess lands, to terminate such contract provided payment is made to the United States, acting through the Bureau of Reclamation, Department of the Interior, of the amount of money equal to the number of acre-feet of water furnished such excess land multiplied by twice the rate charged per acre-foot of water furnished to his nonexcess lands.

Sec. 3. The Secretary of the Interior, in entering into any contract under Subsection (d) of Section 9 of the Reclamation Project Act of 1939, 53 Stat. 1187, 1196, shall include provisions permitting either or both (1) the furnishing of water service to excess lands in accordance with the requirements of the third sentence of Section 46 of the Act of May 25, 1926, 44 Stat. 649, as amended, 43 U.S.C. Section 423e (1964 ed.), and (2) the furnishing of water service to excess lands without regard to the requirements of said Section 46 provided the contracting organization agrees to pay, with interest on the unpaid

balance of, the pro-rata share of the irrigation cost allocation of the project, division, unit or service area, as the Secretary may determine to be appropriate, which is attributable to furnishing irrigation benefits in each particular year to land held in private ownership by any one owner in excess of 640 acres (or such larger number of acres as may be determined pursuant to Subsection (b) of Section 46 of the Act of May 26, 1926, as amended). The Secretary of the Interior is hereby authorized to negotiate amendments to existing contracts for a water supply so as to give contracting organizations the benefits of this section, if so requested: Provided, that an excess landholder who has executed a recordable contract as provided for in the third sentence of Section 46 of the Act of May 25, 1926, may not be relieved thereof and be furnished water service for excess lands pursuant to a contract including the alternative provisions provided for in this Act except on the basis of a retroactive adjustment and payment to the United States of the amounts that would have had to be paid under the provisions of this Act for water furnished for his then excess lands.

Sec. 4. The Secretary of the Interior, in entering into contracts under Subsection (e) of Section 9 of the Reclamation Project Act of 1939, shall include provisions permitting either or both (1) the furnishing of water service to excess lands in accordance with the requirements set forth in the third sentence of Section 46 of the Act of May 25, 1926, as amended,

and (2) the furnishing of water service to excess lands without regard to the requirements of said Section 46 provided the contracting organization agrees to pay rates for water service furnished to excess lands which will return, with interest and an appropriate share of operation and maintenance costs, the pro-rata share of the irrigation cost allocation which is attributable to the furnishing of such water service to excess lands, as determined by the Secretary of the Interior.

Sec. 5. The interest rate for application under the provisions of Sections 3 and 4 of this Act shall be determined by the Secretary of the Treasury, as of the beginning of the fiscal year in which the contract is executed or amended, on the basis of the computed average interest rate payable by the Treasury upon its outstanding marketable public obligations which are neither due nor callable for redemption for fifteen years from date of issue, and by adjusting such average rate to the nearest one-eighths of 1 per centum.