



# FEDERAL REGISTER

The Daily Journal of the United States Government



Notice

## Deprecation of the United States (U.S.) Survey Foot

A Notice by the National Institute of Standards and Technology on 10/17/2019



### AGENCY:

The National Institute of Standards and Technology and the National Geodetic Survey (NGS), National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce (DOC).

### ACTION:

Notice; request for comment.

### SUMMARY:

The National Institute of Standards and Technology (NIST) and the National Geodetic Survey (NGS), National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), are taking collaborative action to provide national uniformity in the measurement of length. This notice announces a decision to deprecate the use of the "U.S. survey foot" on December 31, 2022. After that date, the "U.S. survey foot" will be superseded by the "foot" (formerly known as the "international foot"), which is already in use throughout the U.S. This notice describes the plan, resources, training, and other activities of NIST and NOAA that will assist those affected by this transition, and invites comments and other information from land surveyors, engineers, Federal, State and local government officials, businesses, and any other member of the public engaged in or affected by surveying and mapping operations.



North Carolina Emergency Management



# A tale of two feet



## Two versions of “foot” in current use:

“Old” U.S. survey foot → “New” international foot

1 ft = 0.3048006096... m

1 ft = 0.3048 m *exactly*

differ by  
2 parts per million  
(ppm) or 0.01 ft/mile

***A real*** problem with ***real*** costs

# An NGS proposal

- **Only one foot after 2022 (1 foot = 0.3048 meter)**
  - Make official through NIST
  - **NO** option for U.S. survey foot
- **NGS will help with the transition**
  - Will fully support backward compatibility
  - Use “correct” foot for SPCS 83 and SPCS 27
  - Automatically done by NGS products and services
- **Guiding ideas**
  - Best opportunity to make the change
  - Of all changes in 2022, this is the least significant
  - Will make things better
  - About the *future*, not the past

# The problem (and some questions)

- **Two versions of same unit in current use**
  - “New” international foot and “old” U.S. survey foot
  - “New” shorter than “old” by 2 ppm (**0.01 ft per mile**)
  - A *real* problem with *real* costs
- **What’s in a name?**
  - “U.S. survey” versus “international”
- **Who is using U.S. survey feet?**
  - Surveyors exclusively, in most (*not all*) states
  - But it impacts everyone
- **What should we do?**
  - Begin with a *conversation*

# Kicking the can (Federal Register) 1959

“Any data expressed in feet derived from and published as a result of *geodetic surveys* within the United States will continue to bear the following relationship as defined in 1893:

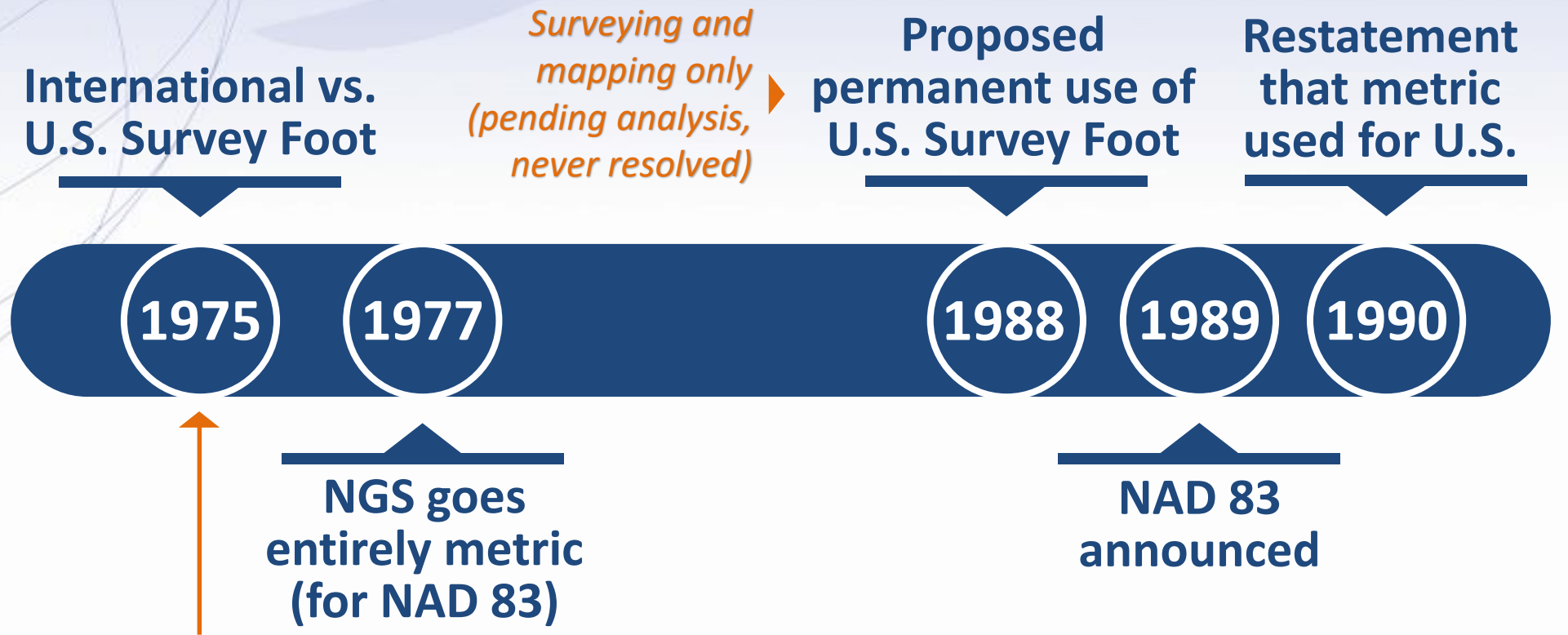
$$1 \text{ foot} = 1200/3937 \text{ meter}$$

The foot unit defined by this equation shall be referred to as the **U.S. Survey Foot** and it shall continue to be used, for the purpose given herein, **until such a time as it becomes desirable and expedient to readjust the basic geodetic survey networks in the United States, after which the ratio of a yard, equal to 0.9144 meter, shall apply.**”

[https://geodesy.noaa.gov/PUBS\\_LIB/FedRegister/FRdoc59-5442.pdf](https://geodesy.noaa.gov/PUBS_LIB/FedRegister/FRdoc59-5442.pdf)

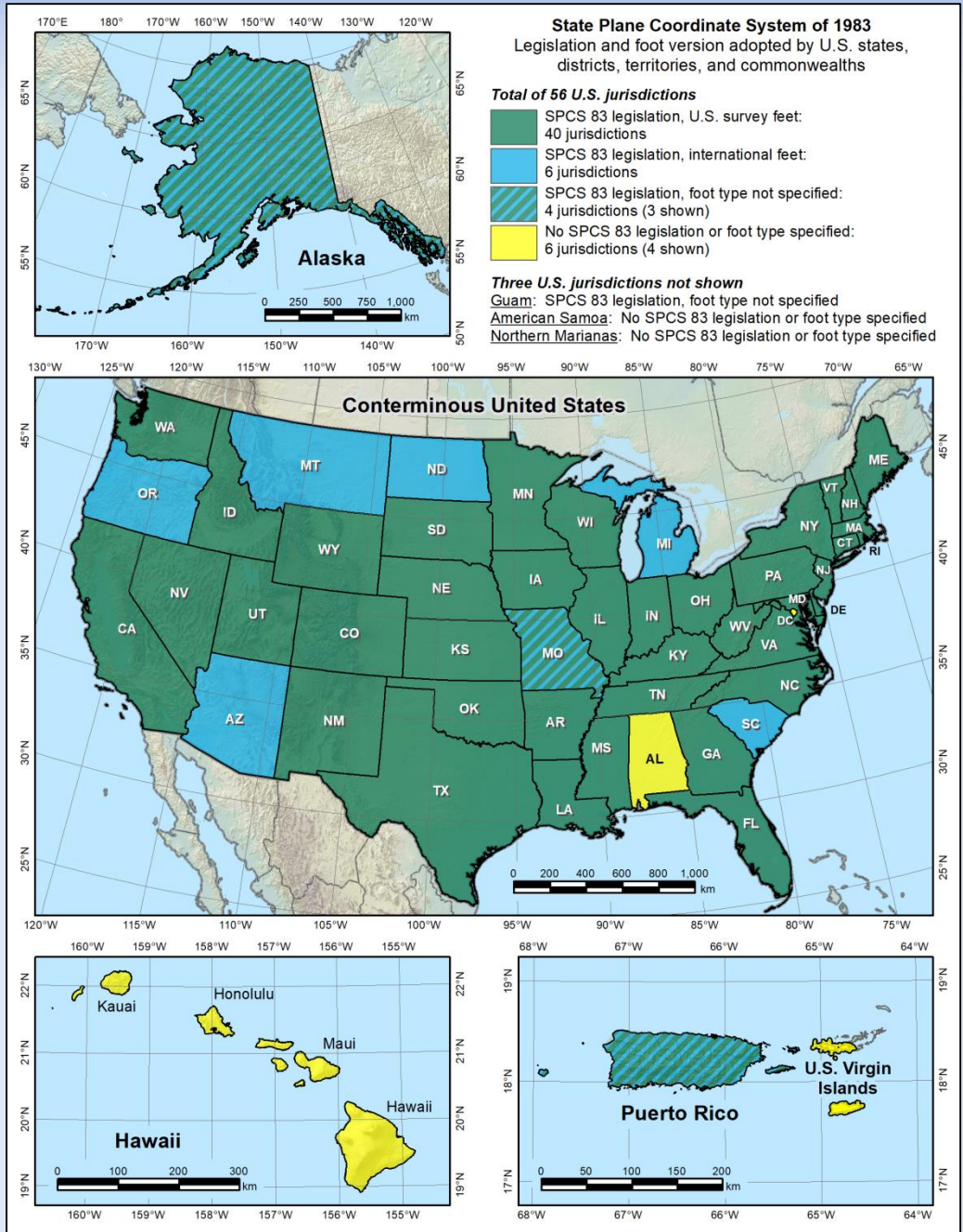
Signed by NBS and C&GS directors, approved by Secretary of Commerce, June 25, 1959

# More Federal Register Notices



- *International foot used for "engineering"*
- *U.S. survey foot used for "mapping and land measurement"*





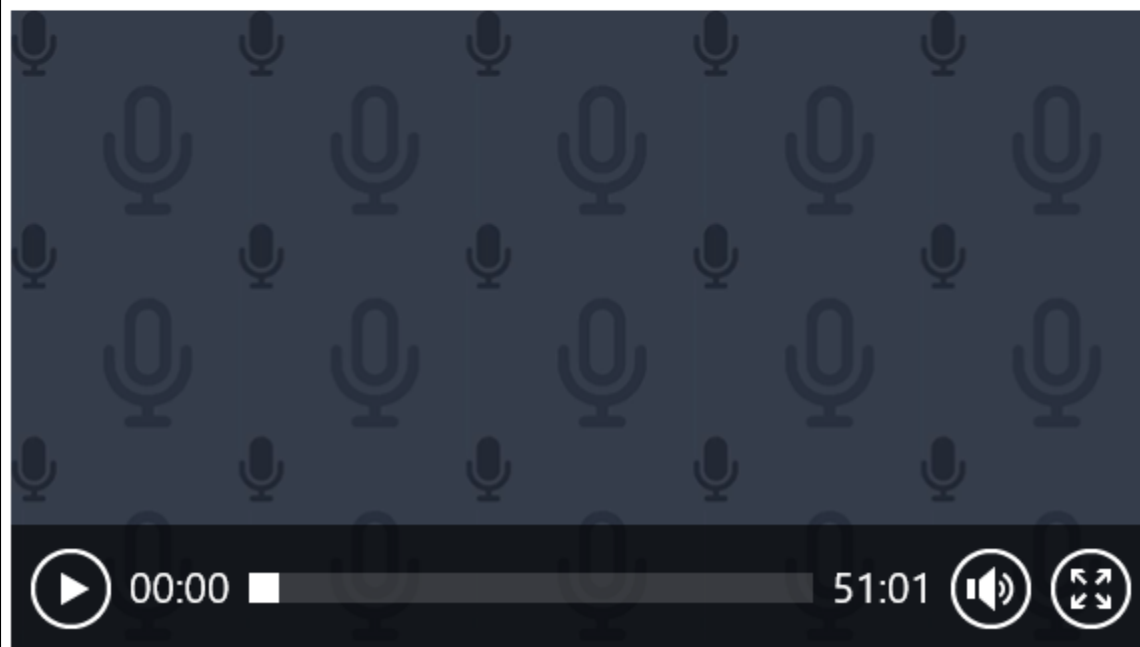
## Fate of the U.S. Survey Foot after 2022: A Conversation with NGS

April 25, 2019 | 2-3 pm, Eastern Time

Dr. Michael Dennis, National Geodetic Survey

Having two feet is great for people, but not so good for standards. Since 1959, two definitions of the foot have been used in the U.S. One is the "international foot", adopted nationwide at that time. The other is the "U.S. survey foot", a renamed perpetuation of the 1893 definition that was intended as temporary. Although the U.S. survey foot is longer by only 2 parts per million (0.01 foot per mile), having both in use at the same time creates real problems with real costs. The result is decades of confusion and chaos in fields where large distances and coordinates are used, such as surveying and mapping. NGS missed an opportunity to fix this problem in 1986, with the change from the NAD 27 to NAD 83 datums. Another opportunity is in 2022 with the modernization of the National Spatial Reference System. This webinar reviews the history of the foot, discusses the vital importance of standards, and gives examples of problems created by having two feet. It shows how NGS can help move the U.S. toward a single, uniform definition of the foot to restore order from chaos.

**Beginner Technical Content Rating:** No prior knowledge is necessary.



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# Questions?

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