

Date of Hearing: June 7, 2023

ASSEMBLY COMMITTEE ON LOCAL GOVERNMENT  
Cecilia Aguiar-Curry, Chair  
SB 566 (Jones) – As Amended May 30, 2023

**SENATE VOTE:** 37-0

**SUBJECT:** Geodetic datums and spatial reference network.

**SUMMARY:** Authorizes the use of additional geographical measurement systems for the purposes of surveying and mapping. Specifically, **this bill:**

- 1) Defines the following terms:
  - a) “NATRF2022” to mean the North American Terrestrial Reference Frame of 2022.
  - b) “PATRF2022” to mean the Pacific Terrestrial Reference Frame of 2022.
  - c) “CCS2022” to mean the California Coordinate System of 2022.
  - d) “NSRS” to mean the National Spatial Reference System.
  - e) “NAPGD2022” to mean the North American-Pacific Geopotential Datum of 2022.
- 2) Specifies that the California portion of the system of plane coordinates defined as the State Plane Coordinates System of 2022 (SPCS2022) established by the National Geodetic Survey (NGS) and maintained by either NGS or the California Spatial Reference Center (CSRC) shall be known as CCS2022.
- 3) Provides that the use of the term “State Plane Coordinates” additionally refers to CCS2022.
- 4) Specifies that for CCS2022, the official conversion, commonly called the international foot, shall be used (one foot equals 0.3048 meters).
- 5) Provides that after January 1, 2025, new surveys and mapping projects may be based upon CCS2022.
- 6) Specifies that the official geodetic datum to which horizontal portions and ellipsoid heights are referenced within the State of California shall also be NATRF2022 or PATRF2022.
- 7) Provides that the official geodetic datum to which orthometric heights are referenced within the State of California shall also be NAPGD2022.
- 8) Specifies that the use of NATRF2022, PATRF2022, and NAPGD2022 by any person, firm, or governmental agency is optional.
- 9) Makes numerous other technical and conforming changes.

**FISCAL EFFECT:** According to the Senate Appropriations Committee, pursuant to Senate Rule 28.8, negligible state costs.

**COMMENTS:**

- 1) **Bill Summary and Author's Statement.** This bill authorizes the use of NATRF2022, PATRF2022, NAPGD2022, and CCS2022 for the purposes of surveying and mapping. This bill also make numerous technical and conforming changes. The California Land Surveyors Association is the sponsor of this bill.

According to the author, "The old reference frames in state law for land surveying and mapping have become outdated and the physical survey marks they rely on are getting harder to access and maintain because they deteriorate over time. The new reference frames authorized for use in this bill will rely primarily on global satellite systems and other updated models that better reflect the dynamic geophysical processes involved in spatial measurements and adjust with the Earth's movements to help keep measurements accurate."

- 2) **Land Surveying.** Land surveying is the science and practice of accurately determining the position of points in three-dimensional space and the angles and distances between them. It is required in the planning and execution of nearly every form of construction and is commonly used in the fields of transportation, building construction, communications, mapping, and to establish land boundaries for legal ownership. Professional land surveyors in California are licensed and regulated by the Board of Professional Engineers, Land Surveyors and Geologists (Board) within the Department of Consumer Affairs according to requirements set forth in the Land Surveyors Act (Act).

Geodetic surveying is defined as performing surveys, in which account is taken of the figure and size of the earth to determine or predetermine the horizontal or vertical positions of fixed objects thereon or related thereto, geodetic control points, monuments, or stations for use in the practice of land surveying or for stating the position of fixed objects, geodetic control points, monuments, or stations by California Coordinate System coordinates.

- 3) **National Geodetic Survey.** NGS, administered by the National Oceanic and Atmospheric Administration under the United States Department of Commerce, maintains and provides access to the National Spatial Reference System (NSRS). The NSRS provides a consistent coordinate system that defines latitude, longitude, height, scale, gravity, and orientation throughout the United States and its territories and is designed to meet economic, social, and environmental needs.

According to NGS, "For 200 years, NGS and its predecessor agencies have collaborated with public and private organizations to establish reference stations at precisely determined locations. Traditionally, these locations have been identified by setting a survey mark—usually a brass, bronze, or aluminum disk. Locations might also be identified by a deeply driven rod or a prominent object, such as a water tower or church spire. More recently, NGS has fostered a network of continuously operating reference stations (CORS) where each CORS includes a highly accurate receiver that continuously collects radio signals broadcast by Global Navigation Satellite System (GNSS) satellites. The reference stations form a network used to accurately position other points of interest. Surveyors, mapping professionals, and others use the NSRS to ensure their positional coordinates are compatible with those determined by others. In this way, when individuals create maps; mark property boundaries; and plan, design, and build roads, bridges, and other structures, everything matches up."

NGS began the process to modernize the NSRS in 2007 and adopted a 10-year modernization plan in 2008. In 2013, NGS revised the modernization plan and delayed the release of the updated NSRS until 2022. NGS noted that, since 2017, operational, workforce, and other issues have arisen, causing NGS to recently re-evaluate whether a successful roll-out by 2022 is possible, saying, “it is not out of the question to consider a complete roll-out of the modernized NSRS to be somewhere in the 2024–2025 timeframe.”

- 4) **Prior Legislation.** SB 414 (Jones), Chapter 106, Statutes of 2021, made a series of largely technical and conforming changes to laws relating to land surveying and the Land Surveyors Act. Additionally, since 2019, the Legislature has adopted numerous resolutions designating a week in March as National Surveyors Week, including, most recently, Senate Resolution 19 (Wilk) of this year.
- 5) **Arguments in Support.** According to the California Land Surveyors Association, “Current law establishes a geographical measurement system used in surveying and mapping known as ‘the official geodetic datums and spatial reference network.’ This includes the North American Datum of 1983 (NAD 83) and the North American Vertical Datum of 1988 (NAVD 88). The National Spatial Reference System (NSRS), managed by the National Geodetic Survey (NGS), is a coordinate system that includes latitude, longitude, elevation, and other values. The NSRS consists of a National Shoreline, a Global Positioning System (GPS), a network of permanently marked points, and a set of models that describe dynamic geophysical processes affecting spatial measurements.

“Until 2022, the system has been based on NAD 83 and NAVD 88. The old reference frames have become outdated and are getting harder to access and maintain because they rely on physical survey marks that deteriorate over time. To improve the NSRS, the NGS will replace all three NAD 83 frames and all vertical datums, including the NAVD 88, with new terrestrial reference frames and a geopotential datum. The new reference frames will rely primarily on Global Navigation Satellite Systems (GNSS), such as GPS, and a gravimetric geoid model resulting from our Gravity for the Redefinition of the American Vertical Datum (GRAV-D) Project.

“SB 566 will simply authorize using updated measurement systems, including the North American Terrestrial Reference Frame of 2022, the Pacific Terrestrial Reference Frame of 2022, and the North American- Pacific Geopotential Datum of 2022 for land surveying and mapping.”

- 6) **Arguments in Opposition.** None on file.

## **REGISTERED SUPPORT / OPPOSITION:**

### **Support**

California Land Surveyors Association [SPONSOR]

### **Opposition**

None on file

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