

RCW 58.20 Washington Plane Coordinate System

New Datums Are Coming, Get Ready

Coordinate Systems define spatial relationships on the earth (geoid). They are used for everything from defining physical location of property and fixed works, to Geographic Information Systems (GIS).

The Washington Coordinate System was first defined by law in Chapter 168 laws of 1945 using the North American Datum of 1927 (NAD 27). Positions on NAD 27 were derived from manual geodetic control observations with optical equipment and triangulation.

In 1989 the law was updated to adopt the new North American Datum of 1983 (NAD 83), which was based on the partial correction of NAD 27 using Global Positioning System (GPS) observations. Systematic errors from NAD 27 still existed in NAD83.

NOAA's National Geodetic Survey (NGS) is replacing the existing datum of the National Spatial Reference System (NSRS) in 2022. That means the demise of NAD 83 and the North American Vertical Datum of 1988 (NAVD 88). NGS will provide the tools to easily transform between the new and old datums so that legacy data can be used.

The new datums will extend across CONUS and U.S. territories. The geometric horizontal reference frame will rely primarily on Global Navigation Satellite Systems (GNSS), as well as on a gravimetric geoid model resulting from NGS' Gravity for the Redefinition of the American Vertical Datum (GRAV-D) Project. The new horizontal datum replacing NAD 83 will be consistent with geocentric global reference frames defining latitude and longitude.

The vertical datum replacing NAVD 88 is also based on the gravimetric geoid model. The target accuracy of heights relative to sea level (differential orthometric heights) in the new geopotential reference frame will be 2 centimeters vertical over any distance, which is much better than the existing reference frame.

The magnitude of the change in relative positions with the new datums across the U.S. depend on geographic location. For Washington State the change is 1 to 2 meters horizontal, and 1 meter vertical.