

National Spatial Reference System (NSRS) Modernization:

Improvements to the Kentucky State Plane Coordinate System (KSPCS) and how this affects me?

1. Why is this being done? The National Geodetic Survey (NGS) is currently engaged in a multi-year project focused on modernizing the National Spatial Reference System (NSRS) by developing several terrestrial reference frames (TRFs) upon which the NSRS will be redefined. This new framework will subsequently require all states to revise their State Plane Coordinate Systems in order to achieve compatibility with the future modernized NSRS. While the new datums and reference frames comprising the modernized NSRS will carry a 2022 moniker, an actual release date has yet to be determined. Please visit the [NGS New Datums Page](#) for the latest updates.

2. What is it and how is it better? Kentucky's new State Plane Coordinate system will be a series of conformal mapping projections tied to NGS's modernized NSRS for the North American Terrestrial Reference Frame of 2022 (NATRF2022). In addition to a refined single-zone projection (KY1Z) for 2022, there will also be a layer of seven new **low distortion projection** (LDP) zones based on aggregated county boundaries defined by combining the various Area Development District (ADD) boundaries. The legacy North Zone and South Zone projections will be deprecated and not defined on NATRF2022.

The new LDPs have been designed to minimize distortions between the projection plane and the topographic surface as the basis for defining and achieving projection performance. This new performance criteria means that the LDP layer of the KSPCS on NATRF2022 will more faithfully reflect conditions on the ground and eliminate the need for corrective scale factors in all but the most stringent situations.

There is also good news for organizations with projects and products that need to maintain geospatial data on the legacy NAD 83 KSPCS – the revised system has been formulated to include past KSPCS series as defined on both the NAD 27 and NAD 83 datums. Thus, all series, past, present, and future will be supported by the KSPCS as it has been legislatively and administratively revised.

3. Who benefits? Organizations that require their geospatial data be tied to the NSRS will benefit from this change. In addition to achieving future compatibility with the NSRS as it is currently planned, the revised KSPCS includes establishment of seven low-distortion mapping projection zones that will support smooth exchanges of projected geospatial data. This will provide enhanced support for projects related to engineering and surveying activities; the transportation, utility, aviation, agriculture, and construction industries; and agencies monitoring weather forecasts and geologic change. It will also ease the interchange of data amongst these varied applications. Companies involved with autonomous vehicle navigation will also find the new datums very useful.

4. How does it affect me and my data? All geospatial data will require datum transformation (aka reprojection) in order to utilize the modernized NSRS, however, once it is released all major geospatially enabled software should have the SPCS2022 zones pre-programmed into their selection lists, which includes Kentucky's layers and zones. Unlike the release of the original NAD 83 Kentucky Single Zone Coordinate System, the creation of user-defined projections, or coordinate systems, should not be required given NGS's efforts regarding public announcements and educational outreach.

5. How do I prepare and how do I make the change? Prepare by [reviewing this resource list](#), starting with the [KSPCS Standards & Specifications Document](#) and this tabloid-sized [poster](#) that illustrates the new NATRF2022 Layer 1 Statewide Zone and the NATRF 2022 Layer 2 LDP Zones. Also, be sure to check for software updates that incorporate the new reference frame (NATRF2022) and coordinate systems (SPCS2022) when the time comes.