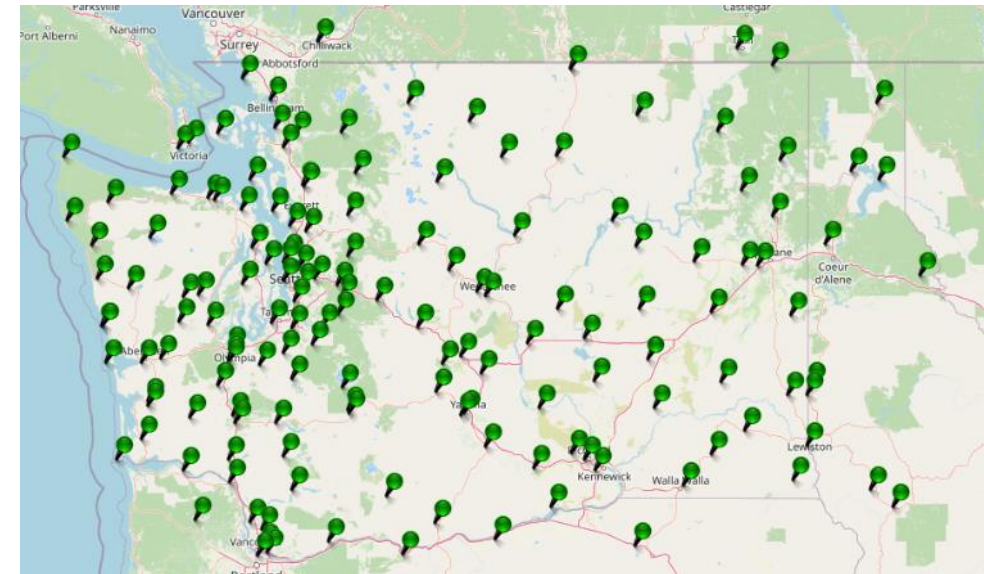


WSRN Update

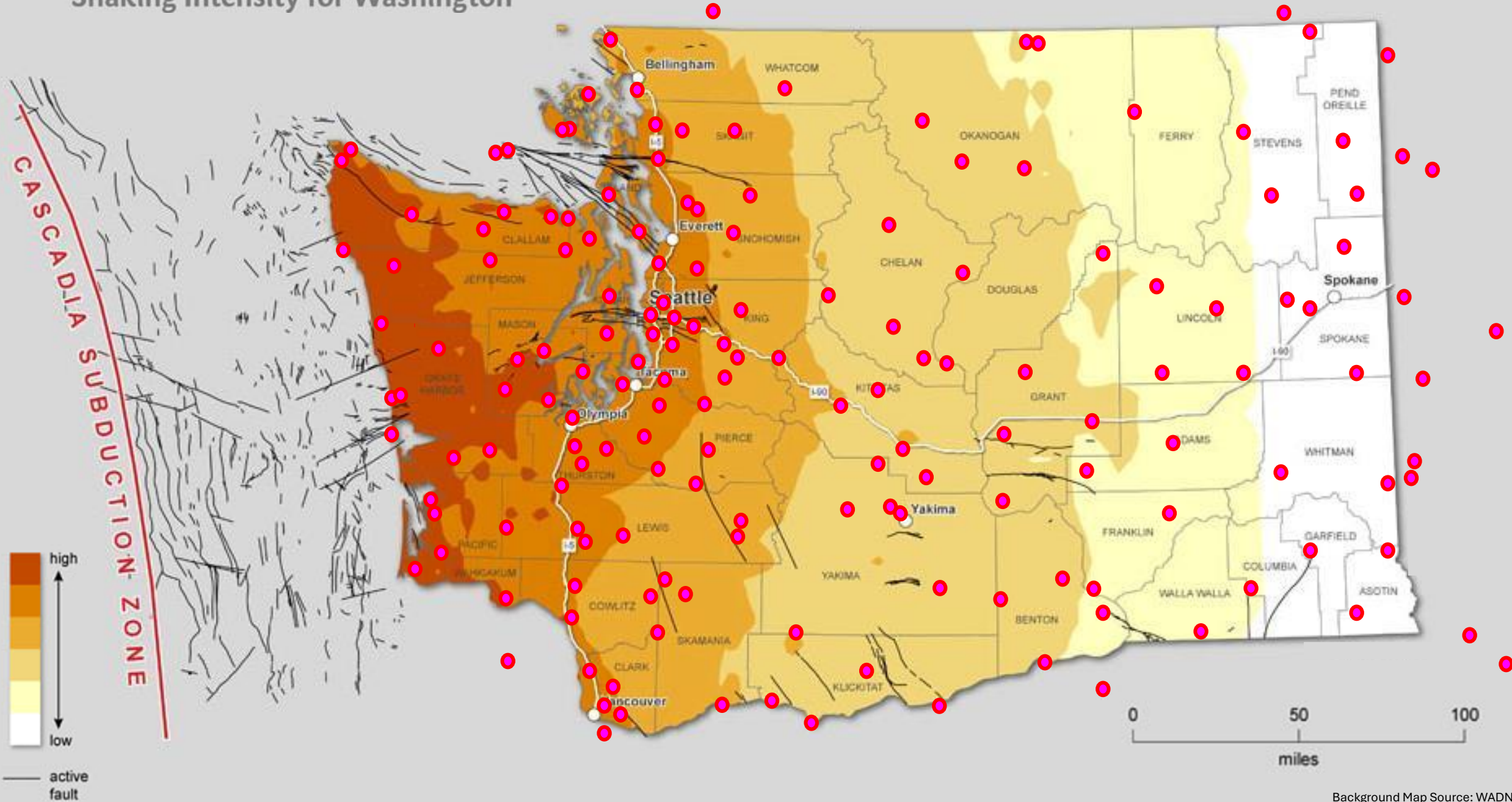
Washington State Reference Network



A Public/Private Statewide
Cooperative Real-Time GNSS
Network est. 2001

Cascadia Subduction Zone Seismic Scenario

Shaking Intensity for Washington



WSRN Update

Operational Model

- Self supporting cooperative
- Partner, science, and schools accounts
- Non-partners (subscribers)
- Revenue funds applied to:
 - Operations
 - IT, comms
 - Surplus invested in upgrades
- Communications
 - Broadband cellular – 85%
 - Hardwire – 10%
 - Satcomm – 5%
- Monuments
 - Drill-brace – 50%
 - Conc/steel pillars – 20%
 - Building – 30%

Partnerships

- 205 partners
 - Site hosts
 - Hardware contributors
 - Services-in-kind
- Sites
 - Science sensor sites
 - Schools
 - Utilities
 - State facilities
 - Municipal/county facilities
 - Private
- Site details
 - 170 sites
 - Bluebooked - 80%
 - NCN CORS – 15%
 - 11 – Earthscope NOTA
 - 6 - WSRN/PANGA/Earthscope
 - All stations included in PANGA
 - 4-constellation – 95%

WSRN Update

Services

- Static files (open)
- Real-time correctors
 - Single-base and network
 - CMR+
 - RTCM3.1
 - RTCM3.4-MSM
- Raw streams
 - Science
 - PPP and hybrid providers
 - Adjacent RTN
- Online post-processing
- Deformation monitoring

IT Model

- 3 instances (3x pairs of VMs)
 - First redundant
 - Second Redundant
 - Dev instance
- Redundant casters
- Stream relay casters
- Static archive loading

User Segments

- Surveying
- Mapping
- Asset inventory/management
- Public safety
- Agriculture
- Construction
- Science
- Autonomy

Geodesy

- Constrained to NSRS
- NCN CORS (fiducial)
- Baseline processing
- Bluebook (check)
- OPUS Projects (check)
- Bernese (check)
- Integrity monitoring tools (continuous)
- PPP (onboard and on server checks)

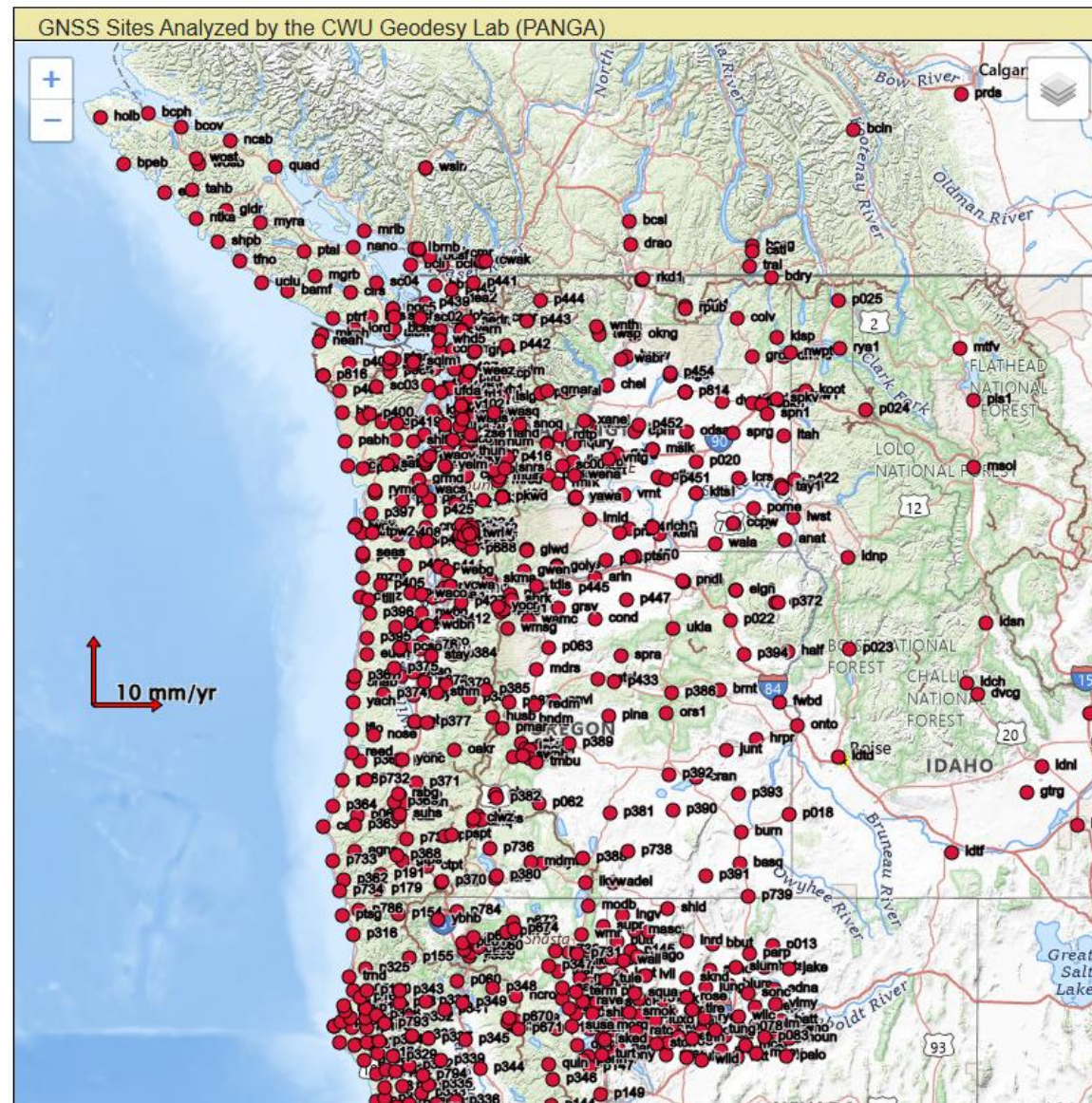
WSRN Update

Key Partner – Central Washington University

- Pacific Northwest Geodetic Array (PANGA)
 - Jointly built/operated sites
 - Site QA/QC
 - Streams form all sites to PANGA
 - Static archive at PANGA
 - Coordinated upgrade plans

Key Science Clients

- Nasa-JPL
- USGS
- BLK
- IGS
- UW



WSRN Update

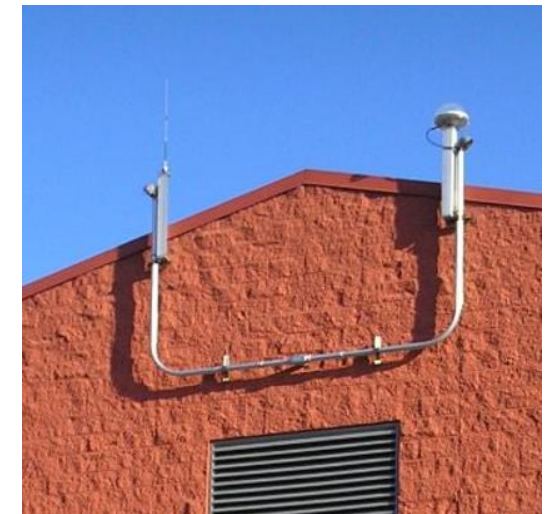
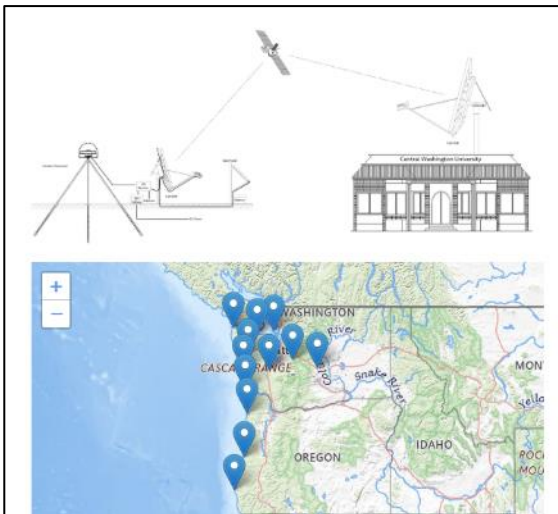


Antenna Standardization

- Choke Ring – 30%
- ZG3 (70%)

Receiver Types

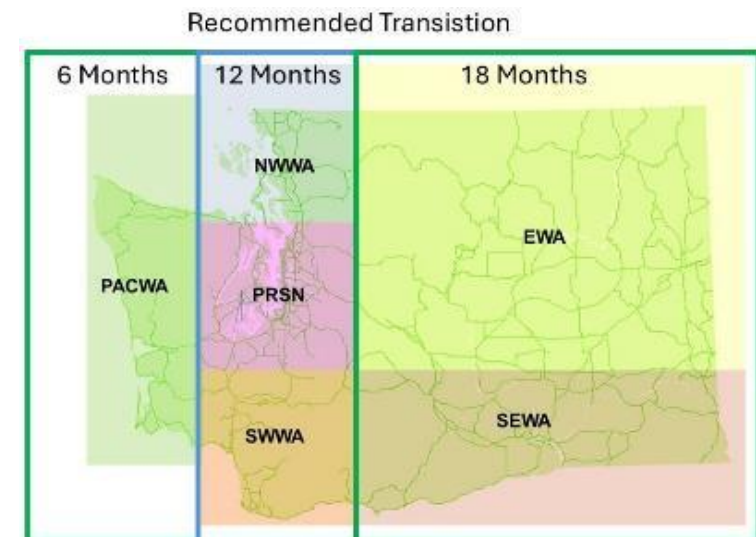
- Topcon
- Trimble
- Septentrio



WSRN Update

Datum Transition Plan

- When the NATRF2022/ITRF2020 NCN CORS positions are released, the WSRN will apply these to a development server, and constrain to these when developing non-CORS positions. Confirmation and testing before the transition.
- **6 Months before the launch**, all users will be notified of the launch date and caster port changes.
- **One month before transition**, the caster port 2011 will be activated.
- **On the launch date**, the WSRN will apply the new positions (overnight) and set the reference frame to NATRF2022. NAD83-2011 will continue to run on the development server. **Caster port 2022 will deliver NATRF2022**, and **caster port 2011 will deliver NAD83-2011**. Port 8080 will be retired.
- **6 Months after the launch**, NAD83-2011 for the PACWA subnet will no longer be recommended.
- **12 Months after the launch**, NAD83-2011 for subnets PACWA, NWWA, PRSN, SWWA will no longer be recommended.
- **18 months after the launch**, NAD83-2011 for all subnets will no longer supported. Caster port 2011 will be turned off.



WA and the New Reference Frame

RCW 58.20.165 Geodetic datums. The official geodetic datums to which geodetic coordinates including, but not limited to, latitude, longitude, ellipsoid height, orthometric height, or dynamic height are referenced within the state of Washington must be as defined for the NSRS. [2020 c 50 s 6.]

RCW 58.20.185 Standard value—One foot. When the values are expressed in feet, one foot equals 0.3048 meters, must be used as the standard foot for WPCS. [2020 c 50 s 8.]

International foot baked into
the new projections

RCW 58.20.200 Term—Limited use. The use of the term "Washington plane coordinate system" on any map, report of survey, or other document, shall be limited to coordinates based on the Washington plane coordinate system as defined in this chapter. [2020 c 50 s 9; 1989 c 54 s 18.]

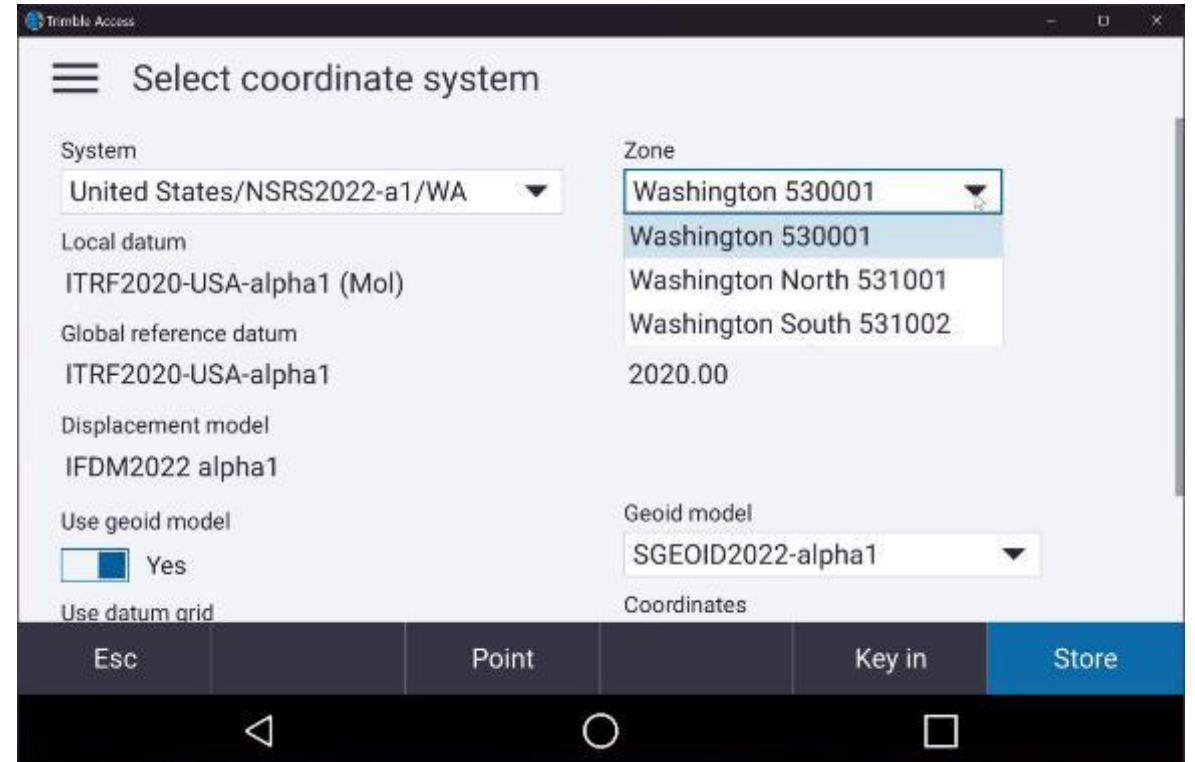
New State Plane Projections

There NGS is releasing new state plane projections:

- WA North Zone Intl-ft 531001
- WA South Zone Intl-ft 531002
- WA Statewide Intl-ft 530001

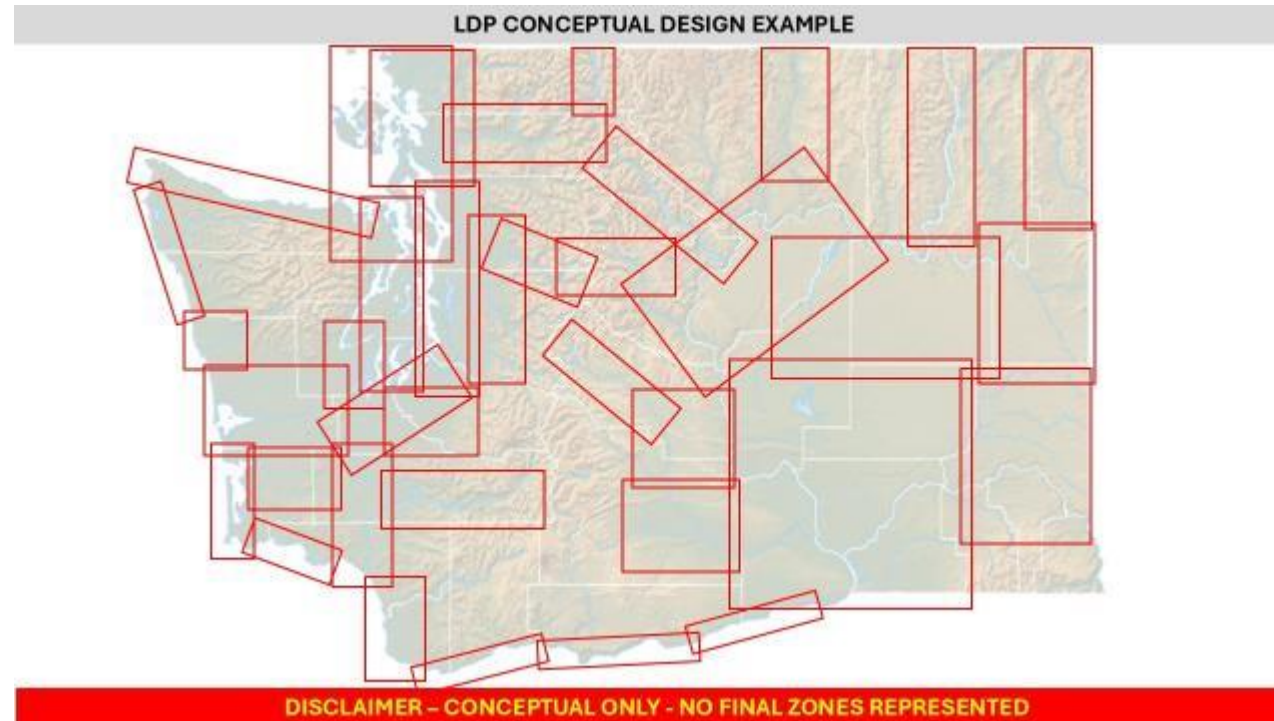
LDP zones are in development for WA
(These will not replace the 3 SPC zones)

Manufacturers are already beginning to add the new SPC zones to projection libraries in field and office software.



WA Low Distortion Projections Initiative

- The WA LDP Development Working Group, chaired by WSDOT, has funding pledges to issue an RFP to contract a geodetic consultant to develop LDPs
- Designed and approved LDPs will be reviewed and published by the NGS. Vendors will add these to standard projection libraries in field and office software.



WSRN Update

Questions?



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PANGA: www.geodesy.org