

**OREGON GNSS USERS GROUP (OGUG)
MEETING MINUTES**

Date: January 16, 2026

Location: Salem Convention Center—Salem, Oregon

Board Members Present: Chase Simpson, Chair (outgoing)
Josh Kowalski, Chair (incoming)
Eric Zimmerman, Treasurer
Chris Munson, Secretary

Called to Order: 8:38 am

Adjourned: 12:04 pm

Contact Hours: 3.0 hours

Business Meeting (8:38-8:42 am)

- Introduction by Chase Simpson, Chair.
- Treasurer’s Report by Eric Zimmerman: \$8,366 in bank account at the beginning of 2025 and approximately \$8,120 currently. Around \$1,200 was collected in dues and approximately \$1,400 expended for 5 years of webhosting.
- Elections: Tristan Freeman was nominated for the position of Chair Elect for 2026 by Eric Zimmermann and elected by all present. Eric Zimmerman and Chris Munson agreed to continue on as Treasurer and Secretary, respectively, and were elected by acclamation of those present. Josh Kowalski, Chair Elect for 2025, moves into the position of Chair for 2026 per OGUG bylaws.

Lidar for Mapping Transmission Line Corridors, by Ryan Burroughs (8:42-9:14 am)

- Ryan is a Portland Community College (PCC) student in their UAS/GIS certificate program.
- General discussion of high voltage transmission lines.
- Bonneville Power Administration (BPA) 230 kV transmission line runs through PCC Rock Creek campus.
- Ryan used a DJI drone with lidar sensor (Zenmuse). Newer models will automatically detect power lines.
- Software workflow:
 - Google Earth
 - DJI Terra
 - Agisoft Metashape Pro
 - ArcGIS Pro
- Flight mission took place in November 2025. A 15 minute flight collected 20 million points.
 - Flew a similar mission with a RGB camera earlier—lidar was much more accurate/precise and had higher resolution.
- Got LAS data from DJI Terra and processed through Agisoft.
- Question from Randy Oberg on the purpose of the flight. Ryan answered that it was to measure the proximity of vegetation to power lines for maintenance.
- Ryan added a buffer zone to his processed data (25-30 feet) to determine a safety zone for which intruding vegetation presents a hazard.
- Interesting facts from BPA:
 - Electricity can arc up to 15 feet away from the power lines.
 - Lines can sag up to 14 feet on a hot day.
- Ryan tried to automate proximity analysis with “Locate LAS Points by Proximity” tool. Had limitations.

- Analysis found vegetation encroachment on sides of power line corridors in some areas. Underneath the lines was fine.
- Ryan touched on points on how to make the mission/analysis better next time and asked if anyone had questions.
- Federal Communications Commission won't approve new DJI drones.
- Cannot use DJI drones for federal projects going forward. Randy Oberg commented that this affects the Oregon Department of Transportation (ODOT) and is looking for US-made alternatives.

GEOID2022 Slope Validation Surveys in the Willamette Valley, by Müge Albayrak (9:14-9:36 am)

- Müge gave an introduction and outline of the presentation.
- Scientific goal: Terrestrial gravity data points are sparse in the Willamette Valley compared to the Portland area.
- Astrogeodetic measurement techniques:
 - Only about 10 systems in the world.
 - QDaedalus system (around 6+ operational). Includes CCD camera, Leica total station, GPS antenna and interface box.
- Took observations at 23 marks between May-June 2025. Since the system is observing stars, it needs to be done at night.
- Müge showed the results in deflection of vertical at observed points.
- Analysis: Geology affects accuracy of GEOID2022, up to 0.1 meters in higher elevation Coast Range sites.
- Conclusions: GEOID2022 and DEFLEC2022 are accurate in low-lying areas of the Willamette Valley despite poor terrestrial mark data. Larger variations occur in higher elevation areas.
- Q&A.
- Takeaway: GEOID2022 is not perfect—there is still uncertainty, especially in areas where the geography is changing.

Survey Synergy: Putting Hybrid Workflows Efficiency to the Test, by Dana Lind (9:36-10:09 am)

- Dana outlined her personal background. She is an OSU Geomatics Master's program student.
- Field work was accomplished in Fall 2025, using levelling, total stations, real-time and static GNSS.
- Dana gave an overview of the survey design, field procedures and equipment.
- Data processing/stochastic model.
- Analysis
 - Formal errors
 - Residuals
 - RMSE
 - Cost per method
- Takeaway
- Q&A

Break (10:09-10:27 am)

Comparison of Methodologies to Migrate Legacy GNSS Control Point Coordinates Toward NSRS Modernization, by Sanjaya Paudel (10:27-11:00 am)

- NSRS modernization overview and expected shifts.
- Study area and datasets: DOGAMI base station in Nehalem Bay State Park.
- Workflow

- Resurvey.
 - Process with OPUS and CSRS-PPP (Canadian Spatial Reference System).
 - Results & residuals.
- Transform using Earth-centered Earth-fixed (ECEF) XYZ coordinates.
 - Raw ECEF coordinates.
 - Remove site calibration.
 - Remove Molendensky transformation.
 - Transform. Must use HTDP or will get large residuals.
- Comparison
 - Resurveying: High cost, high precision.
 - Reprocessing: Medium cost/effort, can use with well-documented legacy data.
 - Transformation: Use when spend & scale matter.
 - Limitations of methods.
- Key takeaways
 - Select method based on precision requirement and available data (and data quality).
 - Prioritize reprocessing when original RINEX data is available.
 - Use HTDP if only coordinates are available.
- Acknowledgments
- Q&A

Transforming BIG Data to the Modernized NSRS in Oregon, by Susanna Eng and Michael Olsen (presented by Chase Simpson) (11:00-11:36 am)

- New reference frame (NATRF2022), geoid (GEOID2022) and SPCS22 zones.
- Recommendations (ordered from most accuracy & cost to least):
 - Resurvey
 - Reprocess
 - Readjust
 - Transform
- Transform: Chronoshifter (software by Mike Olsen). Transforms 19 million points in 4 minutes, leverages NGS HTDP, which doesn't work on its own for large datasets.
- Transformation workflow overview:
 - Prepare data
 - Transform reference frame
 - Update geoid and coordinates
- Readjust workflow overview:
 - Requires raw GNSS observations.
 - OPUS, HTDP, geoid and projection.
- Reprocessing workflow
 - Case studies
 - Spencer Creek, Oregon
 - Denali, Alaska
- For transformations, you must know the frame the original data was collected in, otherwise it won't work.
- Preparation steps you can take:
 - Inventory your data and collection methods.
 - Preserve original (RINEX) data.
- Open discussion on transitioning to modernized NSRS

Oregon Real-Time GNSS Network Update, by Randy Oberg and Eric Zimmerman (11:36 am-12:01 pm)

- 2025 upgrades:
 - Adel and Marion County upgraded to full GNSS.
 - Earthscope upgrades.
 - Eliminating TURN from network.
 - RINEX data is longer on FTP site—is on FileNet.
 - Station ODOT is decommissioned, replaced by SALM.
 - Only 3 ODOT stations don't have full GNSS.
- GPS-only port likely going away due to lack of use.
- Once NATRF2022 hits, OCRS2022 will follow.
- May put a new station in Merrill; reconnaissance is done, subject to funding.
- Beta version of NATRF2022 coming out in June 2026, should be in effect by the end of the year.
- ODOT will run NAD83 simultaneously with NATRF2022 (different ports) for an undetermined amount of time to allow people to transition.
- OCRS2022 is legislated in Oregon Administrative Rules (OAR).
- Randy is working with Brady Callahan to issue new OCRS manual.
- Q&A

Closing (12:01-12:04 pm)

- Closing remarks by Chase Simpson.
- Randy Oberg says Oregon doesn't currently have a designated NGS advisor. The current one is standing in for a large area and is going on maternity leave soon.

Adjourned at 12:04 pm

Minutes APPROVED by board majority (Kowalski 5/4/2026, Freeman 5/4/2026, Zimmerman 4/24/2026, Munson 4/23/2026)

Respectfully submitted,



Chris Munson, Secretary
Oregon GNSS Users Group