



Power Line Systems

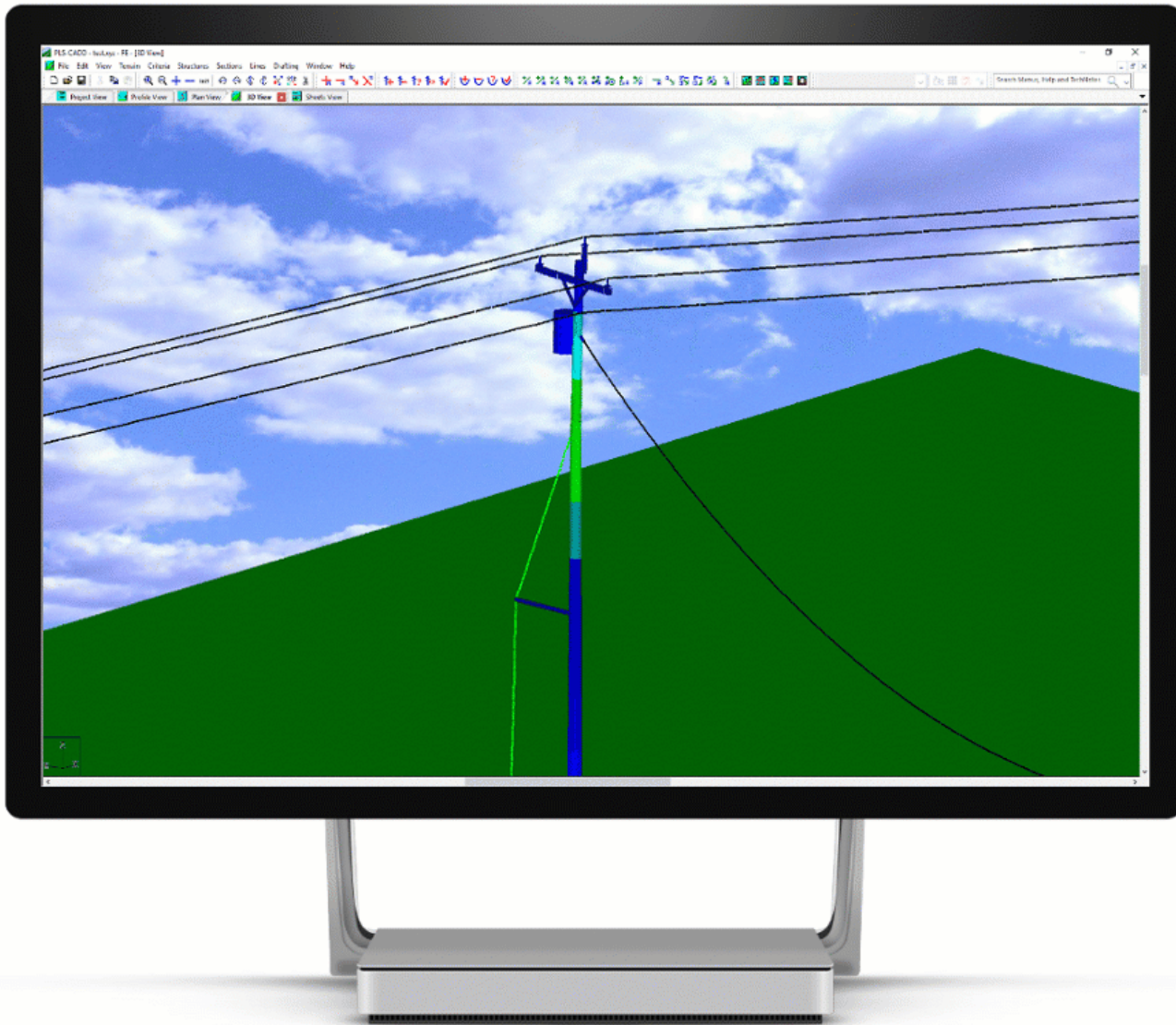
The Industry Standard in Overhead Line Design
Transmission, Distribution, and Communication

Shelby Suski

© 2024 Bentley Systems, Incorporated

POWER LINE
S Y S T E M S
Part of Bentley Systems

Bentley®



Agenda

- Operating Systems
- Hardware
- Q/A as time permits

Supported Operating Systems – Desktop Apps

- x64 editions of Windows 10 and 11
 - Development tools specifically target these versions.
 - These are the version we run and regression test against.
- Windows 7 and 8?
 - Both EOL by Microsoft.
 - No longer officially “supported” by PLS software.
 - May still work, but we no longer guarantee compatibility, or test with these versions.
- Recommendation?
 - Windows 10 or 11 (x64)
 - PLS software “Just works”.
 - 68% run Windows 10, 32% run Windows 11.

Hardware Recommendations – Desktop Apps

- PLS-CADD vs. PLS-POLE / TOWER
 - PLS-CADD: RAM most important
 - Although we continue to parallelize new and existing features when possible
 - PLS-POLE/TOWER: # cores most important
 - Analysis time proportional to (Load cases) / (# cores)
- For all applications
 - PCIe NVMe SSD if files stored local
 - Gigabit or 10 Gigabit to server if files stored remote
 - If network slow then use *Compress XYZ and TIN files* setting in PLS-CADD
 - A 40" 4k or multiple smaller monitors boost productivity
 - Enhanced graphics are starting to use hardware acceleration, but spending money on RAM and cores gives a better ROI

Operating Systems/Hardware – PLS-GRID

- Windows Server 2016 or newer
 - Cloud or on-premise server.
- 8 GB of RAM dedicated to PLS-GRID
 - Add one GB of RAM for every TB of project data.
 - ECC memory.
- AMD Epyc or Intel Xeon processor
 - 2 cores dedicated to PLS-GRID.
 - Additional cores recommended if encryption at rest is enabled.
 - Add one additional core for each additional 100 PLS-GRID users.
- 10 GB of local disk space plus room for project data which can easily stretch to terabytes
- 10-100 GB of additional disk space for base map cache
- 10 Gbps network interface (1 Gbps tolerable for small installations)

The Average PLS Client Computer

- From SBL telemetry
 - RAM (GB):
 - Average: 40
 - Min: 4
 - Max: 2048
 - CPU Cores (Physical/Logical)
 - Average: 8/16
 - Min: 1/2
 - Max: 64/128
 - Operating System:
 - Windows 10 x64

What pushes the limits?

- PLS-CADD
 - LiDAR datasets
 - Massive imagery attachments
- TOWER
 - Family Manager permutations
- PLS-POLE/TOWER
 - 100's of load cases
- PLS-GRID Server
 - Encryption at rest
 - Dataset size
 - Massive improvements since ATUG 2022

Sample Laptop – 16" Screen

- Intel Core Ultra 9 Processor 185H
 - 5.1 GHz
 - 24 MB cache
 - 16/22 cores
- 32 GB RAM
- 1 TB M.2 SSD
- NVIDIA RTX 4050 (6 GB)
- Windows 11

Sample Laptop – 16" Screen (\$)

- Intel Core Ultra 9 Processor 185H
 - 5.1 GHz
 - 24 MB cache
 - 16/22 cores
- 32 GB RAM
- 1 TB M.2 SSD
- NVIDIA RTX 4050 (6 GB)
- Windows 11
- **US \$1499** (July 1, 2024)

Sample Workstations

- PLS-CADD

- Intel i9-14900KF
 - 6.0 GHz
 - 24/32 cores
 - Water cooled/overclocked
- 64 GB of RAM
- 2 TB M.2 SSD
- Nvidia RTX 4060Ti (8GB)
- Windows 11

- TOWER/PLS-POLE

- AMD Threadripper PRO 5975WX
 - 4.5 GHz
 - 32/64 cores
 - Water cooled/overclocked
- 64 GB of RAM
- 2 TB M.2 SSD
- Nvidia RTX 4060Ti (8GB)
- Windows 11

Sample Workstations (\$)

- PLS-CADD

- Intel i9-14900KF
 - 6.0 GHz
 - 24/32 cores
 - Water cooled/overclocked
- 64 GB of RAM
- 2 TB M.2 SSD
- Nvidia RTX 4060Ti (8GB)
- Windows 11

- **US \$2913** (July 1, 2024)

- TOWER/PLS-POLE

- AMD Threadripper PRO 5975WX
 - 4.5 GHz
 - 32/64 cores
 - Water cooled/overclocked
- 64 GB of RAM
- 2 TB M.2 SSD
- Nvidia RTX 4060Ti (8GB)
- Windows 11

- **US \$5913** (July 1, 2024)

Conclusion

- PLS-CADD
 - RAM is cheap, buy lots of it.
- PLS-POLE/TOWER
 - The more cores the better.
- PLS-GRID
 - Storage is king.
- Questions?